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UNIVERSITY OF ALBERTA

ANALYSIS OF CHILDREN'S ACTIVITIES ON ELEMENTARY SCHOOL PLAYGROUNDS

BY

©

DENISE K. WAGNER

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF

MASTER OF ARTS

IN THE

DEPARTMENT OF PHYSICAL EDUCATION AND SPORT STUDIES

EDMONTON, ALBERTA

SPRING, 1993

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ISBN 0-315-82249-X

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DEGREE FOR WHICH THESIS WAS PRESENTED: MASTER OF ARTS

YEAR THIS DEGREE WAS GRANTED: SPRING 1993

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ABSTRACT

The focus of this thesis was to examine the validity and reliability of a playground assessment tool for elementary school children. Validation of the instrument was to confirm whether the skills itemized on the checklist were culturally normative for elementary school children on playgrounds, and reliability of the tool was to determine whether accurate results could be consistently collected with different observers, subjects, and settings.

Observations, at five different elementary schools, were conducted on 60 grade one and 79 grade three children during the free play periods of lunch hour and recess. All subjects were randomly selected, and there was an attempt to balance the number of subjects in both grades and gender divisions. During the observations, interval-event recordings were performed on each of the subjects, using the playground tool as the checklist for activities noted during the viewing sessions. Using the data collected from the observations, frequency counts and rankings were calculated for each playground activity and environment. A total of 1,104 events were recorded, with grade one accounting for 494 incidents, and grade three for 610 events. Descriptive analysis was used to note any trends or tendencies within the play activities according to gender and grade divisions.

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CHAPTER 1

INTRODUCTION

Need for Study

The play activities of children have, at times, been viewed as unsophisticated, but recent research has revealed the vital contributions play makes to the overall development of humans. Rather than just a form of spontaneous amusement associated with youngsters, play activities are now recognized as progressive, integral, and highly complex behaviours that humans acquire, practice, and refine throughout the processes of growth and development. "It is through play and its function of aiding the child to explore the environment that the child learns the procedures required to solve problems posed by the environment in later life" (Barnett, 1979, p. 42). Ultimately, the play skills that a child acquires, and the range of environments that these skills are applied in, can influence the level of performance and degree of involvement that a child experiences throughout the school years.

Successful acquisition of play skills can lead to the development of desirable attributes and actions, while a lack of appropriate skills has been found to create an inability to function in "normal" play circumstances. "In all cases there are social, cognitive, emotional, and motor skills that must be brought to bear in the situations to make it successful ... [and] ... should any one of these domains be reduced in efficiency, the child may be put at risk" (Watkinson & Muloin, 1988a, p. 2). The failure of a child to exhibit expected play behaviours could lead to isolation from other play opportunities, and possible rejection from playmates and peers.

Handicapped children experience isolation in play and rejection from non-handicapped peers because they may be different in their physical abilities and capabilities. Differences in play behaviours become most pronounced when integration is implemented. Examples of such cases can often be found in school physical education classes, or during the free play periods of lunch hours and recess breaks. Inadequate motor skills are often cited as the basis for lower levels of involvement noted in handicapped children, but little research exists which analyzes the tasks that are specific to the activities and structures encountered in children's free play endeavours (Matthews, 1980).

With integration occurring throughout society, it is becoming increasingly important to identify what Fait (1983) terms as " ... basic skills - those skills used most frequently and which are most important in the daily life functions and play of children" (p.176). By identifying and evaluating these "basic skills" in non-handicapped populations, it would be possibie to define what skills form the base for typical and effective levels of involvement and performance. In essence, activities characteristic of non-handicapped populations could be regarded as the "cultural norms" and then used as guidelines for assessing the quality and range of behaviours possessed by and individual. Activities could be identified within different environments or "econiches", and a core of "basic skills" or a set of cultural norms could be defined.

Identifying basic skills in both the handicapped and non-handicapped populations would contribute to the overall understanding of motor behaviour. There is a need for valid and reliable tests which identify the "effective skills [forming] the foundation of effective motor performance", and which " ... provide an adequate procedure for determining levels of motor ability ... and the range of motor ability" (Fait, 1983, p. 176). While tests do exist that examine motor performance, the ecological validity of tasks and settings used in many of the procedures can often be questioned. Identifying basic skills in selected econiches would, potentially, provide researchers with ecologically valid tests for those settings. Overall, this type of research would be directed at specific needs and situations, " ... [creating] a body of scientific knowledge that emerges from the fundamental edge of basic research but is directed at specific practical needs" (Reid, 1989, p. 2). By increasing the understanding of effective or "normal" performances, the understanding of the factors contributing to poor or ineffective performances would be enhanced (Reid, 1989).

The establishment of a list of basic play skills requires extensive observation and analysis of behaviours occurring in specific econiches. The playground is one econiche that is often recognized as providing children with opportunities to develop competence and confidence in a wide range of play activities. Pellegrini (1987) indicated that a majority of the research relating to play and playgrounds focused on the social and cognitive aspects of play, and that little analysis had been done on the development and range of play activities performed within a playground setting. Research by Watkinson & Muloin (1988a) attempted to identify the play activities, and games that were observed in handicapped and non-handicapped children on elementary school playgrounds. The authors concluded that certain tasks appeared to be characteristic of different ages of children in various environments, and particular activities could be deemed culturally normal. A preliminary observational tool was derived from the activities observed, resulting in the compilation of a list of play activities which could be regarded as an initial draft of basic skills for a playground environment. This served as a base for the following study. A primary intent of this thesis was to confirm whether the play activities of the playground tool reflected the range of play activities that could be regarded as cultural normative for non-handicapped children on elementary school playgrounds. It was anticipated that if the play activities of the normal population were defined, abnormalities in the performance of playground activities in handicapped individuals could be diagnosed more readily. Overall, the progression of the research was to further analyze the play activities of a normal population, note the characteristic play behaviours, and then organize the components into a useable form of instrument that could be generalized to other environments and levels of ability. The final product would be of benefit not only to the diagnosis and intervention of handicapped individuals, but would also provide guidelines for school physical education classes and skill development programs of the non-handicapped as well.

Statement of the Problem

This research was designed to examine an instrument which listed play activities described as culturally normative for young children on elementary school playgrounds. Two aspects of validity of the instrument were questioned with this research: content validity and ecological validity. Content validity was examined by determining whether the instrument revealed an accurate and adequate sampling of behaviours that reflected the cultural norms of children's playground activities. Collecting data from realistic free play situations within playground econiches provided both context and content validity. Ecological validity was obtained using the instrument with a variety of playground designs, equipment, age groups, and genders.

Inter-rater reliability of the playground instrument was assessed when it was applied to realistic, evaluative circumstances. Reliability was revealed through consistency in the data collected from several observation sessions over a period of time. Interobserver agreement, acknowledged as one method for testing observational reliability (Thomas & Nelson, 1985), was used to determine any difficulties in the format of the tool or in the testing procedures. This information was valuable for designing a "user friendly" tool.

In summary, the key issues of the study were:

1. Do the play activities listed in the instrument reflect the range of activities that are culturally normative for non-handicapped children in playground environments?
2. Do the activities listed contain the basic skills that are required for participation an interaction in playground activities, and with particular types of playground apparatus and equipment?
3. Are certain forms of equipment and their associated play activities used differently by the various age groups and genders?

Operational Definition of Terms

The following terms are used throughout this study:

1. Free Play: "Spontaneous recreation or play involving physical activity in which individuals are free to do what they choose in an unstructured environment" (Muloin, 1988, p. 10).
2. Basic or Modal Skills: "Those skills used most frequently and which are most important in the daily life functions and play of children" (Fait, 1983, p. 176).
3. Culturally Normative Play Activities: The play activities or behaviours that are typically performed by individuals from a particular culture and/or group in society. These activities may be specific to the age and gender of the individuals/groups, the play environments (econiches) and equipment, and the culture's traditional recreational or play interests.
4. Econiche: An area or an environment that contains certain elements which influence the unique types and varieties of behaviours performed by individuals within that particular econiche.
5. Open Space: Area of a school playground that may be open grassy field containing soccer fields, baseball diamonds, and track and field markings, or is a flat, open area covered by asphalt or cement. Some schools may have markings on the hard surfaces for games (eg. Four Square, Hopscotch), or may have tetherball poles and basketball hoops.
6. Fixed Tires/Tubes: Play equipment created by mounting used car and

tractor tires or large plastic tubes to existing playground structures, or by setting them into the ground at various angles. The tires and tubes are not able to be manipulated into other configurations, and are used primarily for climbing.

7. Slide with Ladder: Any form of inclined plane that is used to slide down on. It can be a plain, flat ramp-like structure, a hollow tube slanted upwards, or a twisted, corkscrew type of slide. All are mounted by some kind of upward ladder or pole.

8. Swings: Traditional/Tire: Swinging apparatus consisting of the traditional seat and two cables or ropes, or a tire strung horizontally or vertically with cables or ropes.

9. Climbing Apparatus: Any form of structure that encourages climbing and hanging with various body parts. Includes jungle gyms, monkey bars, chinning bars, ropes, and poles.

10. Small Equipment: Small play apparatus including such items as balls, bats, gloves, and ropes.

11. Games: Play activities that have some level or organization in order to attain a certain type of experience (eg. jump rope rhymes), or objective (eg. scoring a goal). The activities can involve one or two individuals, or can be organized for larger groups or teams.

Delimitations

The research for this thesis was conducted in the play spaces and on the equipment of five different elementary schools within the Edmonton Public School system. Data collection was done by trained observers, and involved the monitoring of free play behaviours of elementary school children (grades one and three) during lunch hours and recess breaks. Observations occurred during the months of May and June. No handicapped or disabled children were included in the subject pool.

Limitations

The five schools involved in the study were determined by the Public School Board administration, therefore eliminating the possibility of random selection of school sites. However, once the names of the schools were obtained, random selection of classrooms from the specific grades and of subjects from within chosen, classrooms was performed. The selected schools reflected different socioeconomic and cultural dimensions, and contained a variety of playgrounds and apparatus. The environments and study participants appeared to be representative of the settings and populations found in urban elementary schools. The data reflects play activities more closely associated with the warmer seasons. Some skills may transfer to different seasons, but cooler weather may alter the range and type of play behaviours observed.

The observations used to compile the initial draft of the tool were conducted in numerous schools, each containing different types of play spaces and apparatus (Lindsay, 1984; Watkinson & Muloin, 1988a). Through the categorizing and itemizing of these observations, variations in the equipment and in the skills performed were recognized. This resulted in a tool with the category headings which described the main purpose or characteristic of the play spaces and equipment (eg. Hard Surface, Climber, Swing), and which listed the tasks that formed the basic skills required for a minimal level of involvement. The generalization of equipment categories and activities was done in order for the tool to accommodate differences in environments, and to recognize the basic play activities required regardless of the variations among schools. It must be emphasized that this research was testing a tool that provided guidelines about play activities that are culturally normative, and that the instrument, when actually implemented, may have to be adapted slightly by adding or deleting items. The addition or deletion of elements would be determined by the degree of relevancy that the test items had to the particular econiche in which the instrument was used. Assessment of activities in playgrounds lacking swings, for instance, would clearly be done with the swings category deleted.

With on-site observations being the major source of data collection for this study, concern was given to the impact that the presence of researchers may have on the behaviours and performances of the subjects. This was overcome by having the observers remain as unobtrusive and non-participatory as possible. Observers were instructed to inform inquisitive children that the play spaces were being "checked out" and that it was important for them to continue to play. If a child persisted in confronting an observer, it was suggested the testers turn and walk a distance away from the child, then continue with the remaining observations as soon as possible.

No pre-testing of physical skills was performed on any of the subjects, and with the random selection of children from the different classrooms and grades, it was surmised that all the appropriate ranges and levels of "normal" activities would be represented. The impact of the physical education curriculum was apparent, with some children using the lunch hours and recesses to practice activities presented during their class times. Although these activities may have had some impact on the types of free play behaviours observed, the classroom influences can be considered a being part of the cultural norms because they are integral to the econiches involved.

CHAPTER 2

LITERATURE REVIEW

A child said to the Universe, I exist!
That, replied the Universe,
has created a sense of obligation for adults.
(S.B. Esbensen)

During this century, society has increasingly developed an appreciation and understanding of children and childhood. As adults have attempted to fulfill their "obligations" of enhancing the lives and experiences of children, the demand for information about children's needs and activities has increased. Over the years, numerous researchers have conducted studies ad observations on the various physical, cognitive, social, and emotional aspects of child development, but less attention has been given specifically to the dimensions and progression of children's play. Recently, play has been acknowledged as a crucial element in the overall development of humans, ad so the study of child's play has gained much credibility. Researchers have been encouraged to " ... pay more attention to play, to study blockages in play the was that they have studied blockages in work and sexuality" (Riesman, 1954, p. 333). The following review of literature will elaborate on aspects ad investigations of play which are related to the activities of children on playgrounds.

The Theories of Play and Playgrounds

Play is a universal activity that has been recorded and depicted throughout the centuries of human civilization. Scholars, as far back as the Greek philosophers, have recognized the significance of play in the development and well-being of individuals, and a diverse collection of philosophies on play has evolved. Despite the hundreds of years that play has been noted and studied, one concise definition or theory of play is unavailable. This is reflective of differing perspectives on what activities play encompasses, and whether or not play is restricted to children and the early developmental years. Researchers have also had difficulty in identifying and defining the specific components that constitute the construct of play, as opposed to the construct of work. It must be recognized that the cultural and religious beliefs of the different societies and eras have had a compounding effect in the attempts to establish a common philosophy of play and play behaviours., in that during some periods of history play has been highly valued, while in other periods it has been denied or condemned. Regardless of the positive or negative trends that play has encountered through the ages, it has remained and important item in human history and development, and is today a topic in the forefront of research with various disciplines.

The existing definitions of play reveal a wide range of beliefs regarding what the nature of play is. Most researchers and text books classify the theories and definitions under the headings of either "classical theories" or "contemporary theories". Classical perspectives have been categorized as works developed from before the eighteenth century up until the 1930's, and emphasize the biological and hereditary influences contributing to human development and behaviour. Contemporary theories are those which draw upon forms of psychology including psychoanalysis, behaviourism, and Piagetian theories. Contemporary perspectives gradually branched out from the classical theories during the 1930's, and continue to be some of the dominating approaches in present day studies (Bruya, 1988a; Frost & Klein, 1979; Frost & Sunderlin, 1984; Hughes, 1991).

Although the current theories of play are somewhat different from those of the classical period, the classical researchers of play were responsible for first postulating the elements and purposes of play in human development. In 1826, Froebel recognized the contributions play made to the developing child by stating that " ... Play is the purest, most spiritual activity of man at this stage, and at the same time, typical of human life as a whole -- of the inner hidden natural life in man and all things. It gives, therefore, joy, freedom, contentment, inner and outer rest, peace with the world". He went on to define play as " ... the natural unfolding of the germinal leaves of childhood" (cited in Frost & Klein, 1979, p. 1-2).

During the later part of the 1800's, Spencer and Schiller related the activities of play to a build up of excess energy, and that " ... when the conditions of life became easier so that an individual or animal did not need to expend all its energy in obtaining food and shelter or gaining a living, the left-over energy was used for play" (as cited in Wortham, 1985, p. 3). These ideas formed the base for the surplus energy theories. In complete contrast to the surplus energy theories, Patrick (as cited in Hughes, 1991) developed the renewal of energy theory and proposed that play was utilized by children as a form of relaxation while they replenished or restored their levels of natural energy. While his ideas accounted for the sedentary activities of children's play, Patrick's theories could not account for the more vigorous behaviours.

Another researcher, Hall (cited in Frost & Klein, 1979), speculated that play had an instinctual base, in that humans repeated their evolutionary history through progression of certain play activities. Unfortunately, Hall's theory could not explain the social aspects of play, nor could it provide rationale for the appeal of modern toys and games. Groos (cited in Hughes, 1991) acknowledged that some behaviours were instinctive, but that the primary purpose of play activities was to perfect the instinctive abilities and to develop the skills and knowledge that an individual would require in order to successfully survive in the adult world. It was accepted that play generally provided opportunities for children to develop and acquire skills and information, but a limitation in Groos' theory was that few similarities could be found in the play of children with the behaviours and performances of adults.

While certain elements of the classical theories are relevant, they each failed to provide a comprehensive understanding of the significance of play to a child's overall development They were also insufficient in explaining the progression or processes that were involved in the acquisition of skills and knowledge through play. The more contemporary approaches recognize the various developmental domains play enhances, and many contemporary studies also explore the processes of learning through play.

The contemporary views of play can be further subdivided according to the viewpoints which underlie their research. Psychoanalytic theories reflect the writings of Freud and Erikson. Freud implied that play activities and behaviours were done to reduce anxiety and were motivated by emotions. Erikson supported the emotional involvement in play, and elaborated on the ideas by suggesting that children progressed through stages of play experiences. Each stage provided opportunities to develop coping mechanisms and personality traits. Particular coping skills were reinforced through the repetitive encounters of challenges during play, thus the child gradually gained control of both actions and emotions (Wortham, 1985).

While psychoanalysis regards emotions as the influencing factor in play, cognitive play theories emphasize intellectual development, thinking processes, and the facilitation of learning through play. Piaget has been one of the most influential researchers in the field of children's intellectual development, with adaptation being the key concept in all his writing. According to Piaget, the primary means in which an organism adapts or develops is by receiving stimuli or information from the environment, then working the information in with existing internal patterns of behaviour (assimilation). The organism then adjusts physically, mentally, and emotionally as a result of the incorporation of the new ideas (accommodation) (Barnett, 1979; Heseltine & Holbern, 1984; Noren-Bjorn, 1982). The adaptation processes are progressive and cumulative, resulting in the formation of distinct stages of development. "Piaget spoke of play as a consolidation of newly learned behaviours; a child first learns something new and then repeats what is learned over and over again until it becomes an established part of his or her repertoire" (Hughes, 1991, p. 19).

Some contemporary theorists have proposed that there is an optimum level of arousal within humans, and individuals will seek out interactions or experiences in order to maintain the desirable level of arousal. Ellis (1973) and Fein (1985) noted the children have a variety of stimulation needs (kinaesthetic, perceptual, and intellectual), and that play behaviours result from the urge to have more variety, novelty, or complexity in interactions with the environment. The search for arousal becomes a perpetual cycle, for as the individual gains more experience and exposure to new situations or fulfills a particular level of need, arousal levels decrease, which eventually results in another need for increased complexity and novelty (Hughes, 1991). The competence-motivation theories by Griffin and Keogh (1982), Harter (1978), and White (1959) acknowledged these stimulation needs and levels of arousal, but believe that individuals continue to repeat activities in order to demonstrate competence over the environment. With the sense of mastery and efficiency that a child may eventually achieve in successful performances, he or she will be reinforced to perform the play activities due to the pleasure, enjoyment, and fun associated with the involvements (Wortham, 1985).

It becomes apparent that play is extremely diverse and complex, yet common characteristics can be identified among the play theories. The simplest and most general summary of play would be that " ... children's play is the freely chosen activity of children; while from the point of view of adults play is a means and may serve several developmental functions, play is undertaken by children as an end unto itself. Play is what children want it to be ... " (Wilkinson, 1980, p. 19). Orlick (1982) described the world of play as " ... the child's natural medium for personal growth and positive learning. Young people are the masters of this magic realm -- they play the most and are most influenced by play. Their play is both serious business and pure fun. At its heart, is signifies nothing less than how they will be in this world" (p. 3). Hayward, Rothenberg, and Beasley (1974) reinforced the ideas that play was individual and highly influential in the overall development of the individual. "A child's play is an important part of his or her cognitive, physical, social, and emotional development. Through play, a child learns about himself and his world. Further, the opportunity to play enhances one's ability to initiate independent activity -- activity which is crucial to the exploration and construction of one's autonomy, identity and self-image as a constructive force" (p. 131).

From a more "scientific" viewpoint, Rubin, Fein, and Vandenberg (1983) suggested that five essential characteristics must be present before and activity can be regarded as play. Firstly, the motivation must come from within the individual (Magin, 1983). It is " ... an end in itself, done only for the sheer satisfaction of doing it" (Hughes, 1991, p. 2). Secondly, play is an activity that must be freely chosen. Any form of coercion, direction, or instruction quickly changes the nature of play, and may in fact change any playful aspect into activities that are more closely associated with work (Fein, 1985; Garza, Briley, & Reifel, 1985; Hughes, 1991). A third aspect of play is that activities must be pleasurable, while the fourth element requires that there must be a certain degree of make-believe involved. Finally, the player must be actively engaged on any level (physically, psychologically, emotionally, or socially) in the endeavours, as opposed to being passive or indifferent to the activities going on. Play is very much experiential and cognitively related, and the combinations of thoughts, experiences, outcomes, and emotions are what affect the progress in play and human development.

The various perspectives have each contributed something to the overall understanding of plays, and each aspect has had considerable impact on society's impressions of play and the promotion of play activities. In return, shifts in the attitudes of society have had a significant influence on play behaviours. One aspect of society that can be seen as representative of the changes is playgrounds.

The use of playgrounds began in North America just prior to the turn of this century. Until the industrial revolution, children were generally regarded as members of the labour force or farm helpers. Little concern or attention was given to play and human development; childhood had little value other than as a period of physical growth. Such opinions were reinforced by the timely religious beliefs and the work ethic, where hard labour was considered to be righteous and a necessity for survival; playfulness was believed to be frivolous and wasteful. By having children employed or busy, they fulfilled their usefulness and overcame the useless playful natures. Physical labour eliminated the need for exercise equipment or activities.

As the industrial revolution progressed, the trends of urbanization, mechanization, and education created circumstances that demanded that needs of play and childhood be considered. Mechanization lowered the physical demands for labour, and fewer children were occupied in the labour force. As more families became affluent and urban communities evolved, the availability of open space for children to play in became restricted, and there was growing concern for the youth who were "doing nothing' and "fooling around" (Mergen, 1978; Smith, 1990; Wood, 1977). The need for education systems and facilities became the popular resolutions to a majority of the societal dilemmas.

The involvement of education had two significant outcomes: 1) the interest in childhood and learning expanded, resulting in research which brought attention to the importance of play, and 2) the school grounds became the safe spaces where children could carry out their play activities.

> "Playground developers of the period advocated large school and public playgrounds. Plenty of space for recreational, organized games was recommended, particularly in cities where little space was available for play. School playgrounds were to serve the community, as well as the school, ... Because there was much concern over the misdeeds which might occur when children, particularly teenagers, played without supervision, arrangements of the playgrounds for organized games such as baseball, volleyball, basketball, tetherball and tennis was of primary importance. A running track and jumping pit were included for athletic competitions. Also recommended for physical development were horizontal bars for climbing and other exercises"
> (Wortham, 1985, p. 4).

The play theories that had implications on the design specifications were " ... space for motor activities and space for running off excess energy (surplus energy theory), practising or repeating motor skills (instinct-practice theory), sand and water for digging, crawling, and climbing (recapitulation theory), and space for running, throwing and climbing (relaxation theory)" (Bruya, 1988, p. 4). From the late 1800's to the early 1920's, playgrounds in North America reflected these beliefs in physical training and excess energy.

A greater range of equipment on playgrounds evolved as child care, nursery schools, and kindergartens became popular. Froebel has been credited with initiating the kindergarten movement in Germany, developing pre-school programs which reinforced the educational value of play in the development of personality, cognitive abilities, and physical skills. His kindergarten designs provided materials such as tools, blocks, and balls, but also provided play spaces which included swings, seesaws, climbing poles, and toys. The methods and practices of the European kindergartens eventually appeared in

North America, including the ideas of play spaces and the specific types of equipment. Such items slowly appeared on the school and public playgrounds, but were meant instead for use by older children and adults (Frost & Wortham, 1988; Wortham, 1985).

By the early 1900's, various organizations began establishing guidelines for the design of play spaces and their equipment. In 1910, the Committee on Equipment of the Playground Association of America published the following recommendations for supervised playgrounds.

> "The essential or desirable apparatus for girls of all ages and for boys younger that 10 years of age include: sand court, four rope swings 10 feet high, one sliding board, two giant strides, two teeter boards or teeter ladders, four sets of ring toss or quoits, and a continuous supply of balls, bats, nets, beanbags, and similar articles. The size of the area was to be about 100 x 200 feet with a capacity (average occasion) of 150 to 200 children ... "
>
> (cited in Frost & Wortham, 1988, p. 21).

Standards for public school playgrounds were not created until 1928, and featured the use of iron, galvanized steel, and wood as materials for the apparatus. The underlying considerations for the recommendations were " ... economical maintenance, simplicity of supervision, safety and recreational value" (Bruya, 1988a, p. 5). Preschools were to have six chair swings, a sandbox, simple low climber, and a small slide. Elementary school playgrounds were recommended to contain: a balance beam, six swings on a frame 12 feet high, a horizontal bar, a giant stride, and optional equipment such as seesaws, travelling rings, and low climbers (Bruya, 1988a; Butler, 1958; Frost & Wortham, 1988). These forms of equipment were widely manufactured and sold throughout North America, making these playground designs and apparatus the standard facilities for most of the school and public playgrounds through to the present day. Such playgrounds and apparatus became known as traditional playgrounds, where " ... the structure of the environment is largely determined by adults as they select and arrange the equipment and secure it permanently to the ground. The equipment is characterized as solid, fixed, and frozen. Observers note that the only moveable parts seem to be the children themselves" (Weilbacher, 1979).

From the 1930's onward, the contemporary theories of play were gaining acceptance and were encouraging a broader range of activities and skills for playgrounds. Creativity, expression, problem solving, and explorations became important concepts in the types of equipment and materials selected for play spaces, and playground designs gave more consideration to the learning, interests, and abilities of children. Various disciplines, from psychology, art, education, and architecture were becoming involved in the creation of play spaces. Actual development of playgrounds during World War Two was somewhat stifled due to rationing of necessary materials. Following this period, during the 1950's and 1960's, several new types of playgrounds appeared.

Contemporary playgrounds were created to provide enriched play experiences by incorporating textures, novel forms, objects of various heights, and structures that emphasized artistry and aesthetically pleasing arrangements (Dattner, 1969; Friedberg & Berkeley, 1970). "Generally, these playgrounds are somewhat sculpted, frequently based on sand or concrete forms, and may include cobblestone mounds to which slides are attached, tunnels under walls or mounds, and a tree house or platforms above the ground. They may also contain some conventional playground equipment" (Hayward, Rothenberg, & Beasley, 1974, p. 134).

A branch of the contemporary style that soon followed was the creative playground. This form of play space maintained as natural an environment (grounds, trees, mounds, etc.) as possible, with the equipment and apparatus hand built, multifunctional, and containing many loose or moveable parts. Some play structures may also ave resembled such items as forts or houses in order to encourage various types of role play (Bruya, 1988a; Frost & Klein, 1979).

Most recent innovations in play spaces have been termed "adventure playgrounds" or "junk playgrounds". Idolized as the types of environments to enhance the total child, they " ... served the needs of children aged 6 to 13 by providing them with an opportunity to play with old cars, boxes, boards, fire, water, and animals in a supervised setting within the community (Wortham & Frost, 1990, p. 51). The inventor of the adventure playground, T.H. Sorensen, believed the " ... modern civilization hampered the play of children with hygienic, overstructured, adult inspired playgrounds, so he provided tools, materials, and space and allowed children to build, change, and create for themselves" (Bruya, 1988a, p. 14). Although fairly popular in Europe, junk playground have been relatively uncommon in North America due to the concerns of liability, a lack of understanding for the necessity of play (despite the research and theories!), and objections to the appearance of such play areas (Bruya, 1988a; Hayward, Rothenberg, & Beasley, 1974).

The traditional playground remains the most common design of playspace with present day communities and schools (Frost & Klein, 1979; Moore, 1985). Large open spaces are provided for the practice of motor skills and games, and the standard variety of equipment still emphasizes physical fitness (eg. bars, climbers, balance beams), or recreational pleasure (eg. swings, teeter-totters, merry-go-rounds, slides). Traditional playspaces have the underlying belief that the surrounding environment and equipment will be conducive to certain activities and games, encouraging children to "burn off steam" while practising various skills. Unfortunately, the creative and affective elements of play and learning are somewhat overlooked in a "pure" traditional design, with many of the play skills pre-determined by the structured equipment and layout of such an area. Children cannot greatly manipulate the apparatus or surroundings, and cannot readily encounter challenges that relate to their individual needs, activities, or age levels (Wortham, 1985). This lack of accommodation and manipulation have caused a tendency for children to overlook the traditional playgrounds for other areas, with some studies finding that traditional playgrounds are vacant for up to 88% of peak play times (Bruya, 1988a; Dee & Liebman, 1970; Wade, 1968). This lack of flexibility and adaptation, and a strong interest in encouraging individuality and creativity, has often resulted in elements of creative playgrounds being added to traditional sites. These additions and combinations have become quite popular because opportunities for imaginative, physical, social, and cognitive activities through play are maximized. The choices and selections of play activities can more readily accommodate various competencies and age levels.

Play Patterns

During the elementary school years, children make substantial advancements in their physical development, but also in their social, emotional, and cognitive capacities. These developmental changes are often reflected in the mannerisms and activities of child's play. The entering of school is the turning point in most youngster's lives, as most of the symbolic and fantasy play gradually evolves into activities with groups of individuals and games with rules. New behaviours and activities become important, if not vital, to the learning and physical involvement of a child.

The school playground and its wide range of play activities is important to the overall school experience. "The school playground forms a part of the total school environment. It is both functionally and qualitatively different from other play environments, because it is mostly used at specific, relatively sort periods (during play time), under adult supervision, in great density (100 or more children at a time, and the children are obliged to stay at the playground (mostly for reasons of safety and responsibility f the staff)" (van Andel, 1985, p. 308). The playground provides a unique environment in terms of the equipment, social contacts, and abilities that children encounter while playing. The playground also provides opportunities for children to generalize information and activities learned in class to more practical situations. "Life in the playground involves the learning of numerous specific skills that are required in order to master and excel at a particular game or solve a particular social problem ... Some of the skills, attitudes, and beliefs acquired at playtime might transfer or generalize to other non-playground situations" (Sluckin, 1981, p. 99).

The school recess program may be the most regular opportunity for children to engage in physical activity, exercise, and recreation (Hovell, Bursick, Sharkey, & McClure, 1978). Various activities can be practised within a context that is both meaningful and relevant to the children. Certain skills are required on the playground, and the playground provides school children with extensions of classroom learning. Careful analysis and observation of playground behaviours could provide information about a child's learning and physical abilities (Hart & Sheehan, 1986; Pellegrini, 1989).

To understand the range and variety in the types of activities performed on a playground, it is useful to review research which documents the activities noted on a playground. Van Andel (1985) observed that play behaviours of elementary school children tended to fall into three major categories: bodily rest, not purposeful (sitting, looking, talking); movement without materials (running, hide and seek, tag); and movement with fixed play equipment (slide, climbing apparatus, swing). The first two categories remained prominent as children grew older, but activities with fixed play equipment tended to decrease after the second grade. Children's play also involves the swings, slides, platforms, climbing bars, horizontal ladders, and small equipment (balls, implements). Associated play behaviours required the practice of several gross motor skills such as balancing, jumping, locomoting, throwing , catching, kicking, swinging, hanging, and climbing (Butcher, 1991; Frost & Campbell, 1985; Hovell, Bursick, Sharkey, & McClure, 1978). Frost (1988) noted that kindergarten and early grade school children participated most frequently in fantasy or dramatic play, and that these activities occurred most often in a creative environment or in an area that was not overly structured by traditional playground equipment. The tendency towards dramatic play gradually decreased with greater amounts of time spent in school. Games and socializing with peers became more popular as children advanced in grade.

Frost and Strickland (1978) analyzed different types of playgrounds and documented the equipment choices and play activities, and found that children were active for more than 90% of the total observations. The subjects revealed a preference for equipment that had some form of movement (eg. swings, teeter-totters, slides) or that was complex and offered several options of play activities (eg. multi-purpose climbers with poles and platforms). Gross motor activities were more common to traditional sites, while creative playgrounds tended to reflect more forms of dramatic play. As grade level increased in the subjects, competition and exercise activities also increased.

Kraft (1989) reviewed the types and intensities of play observed on school playgrounds during recess periods. Children were involved in active play for only 60% of the overall observations, with only 21% of the time spent in vigorous activity (running, climbing, hanging, jumping). Girls demonstrated more social interaction, conversing, and sedentary play, and participated in active levels of play for only 38% of the time that boys did. Boys were observed in active play for 45% of the time. Kraft recommended that recess and lunch hour periods could be used more effectively in the development and practice of play activities by having teachers or play leaders provide encouragement, motivation, and instruction. With the time for recess and lunch hours exceeding the total time allocated to physical education, the learning and development of the students would be enhanced if they were encouraged to practice and apply skills to situations encountered on playgrounds.

The review of play patterns and playgrounds must not overlook the activities performed in the open spaces or fields of the play environment. Games are usually present in some form, generally being very simple and small in the number of participants with the early grades, and gradually building to larger groups with more complex rules and activities in older children. Sports (baseball, basketball, soccer, etc.) have a strong influence in the play activities of school children, both in physical education classes and during the free play periods of lunch hour and recess. Between the ages of 6-8 years, it has been estimated that 20% of a child's free play time is involved with some form of sports (Collins, 1984).

In their research about the complexity and stability of playground games in elementary school children, Borman and Kurdek (1987) discovered age and gender preferences in play activities. Grade two children found tag, watching others, kickball, unstructured play, and bars most popular, while grade five children selected structured play, hopscotch, tetherball, soccer, and football. The activity preferences changed slightly a year later, with hopscotch, tetherball, soccer, and watching others as the main activities for grade threes, and kickball, volleyball, football, and four square as the top five activities for grade six. The participation in grade two between the genders was almost even, but a majority of the activities in grade five were more definitively gender segregated. While the complexity and intensity of boys activities tended to become greater with age, the girls activities tended to maintain their involvement in activities that they had initially engaged in from the previous years.

Lindsay (1984) observed recess and lunch hour play on public school playgrounds, and noted seasonal variations in play. Sports with balls and implements, activities on play apparatus, and common playground games of tag and jump rope were noted during the seasons of spring and fall. During colder seasons, winter activities involving snow and ice replaced some, but not all, warm weather play. Girls were involved in a greater variety of play, while boys participated in fewer types of games but for longer periods of time. There was also the suggestion that the exhibition and involvement of particular activities was age-dependent. Lindsay concluded that the games and activities of a school's playground should be monitored regularly so that teachers have an understanding of the latest trends influencing play, and they can then be more responsive to the play needs of their students.

Gender differences become increasingly apparent during the school years. Girls play more simple games with no teams, officials, or specialized roles, while boys participate in more competitive activities that require higher levels of skill and involve larger groups (Collins, 1984). While girls tend to play one activity or game for a short period of time, they do play a greater variety. Boys become involved in fewer types of activities, but the games are of much longer duration (Hughes, 1991; Lindsay, 1984). More distinct gender divisions occur in play activities as children grow older. Rough and tumble play, play fighting, wrestling, chasing, or mock aggression are also usually noted on the playground, and this behaviour is more common to males in the elementary grades. Females are considerably less involved, although this is apparently changing due to the expanding roles of women in society. The sedate, quiet, "lady-like" attributes are not as strictly reinforced, and there is greater "gender blending" in terms of activities for girls and boys (Hughes, 1991).

Play and Playgrounds

Despite the research on play behaviours of children and noted development in playground designs, little research exists on the play patterns of children in different types of outdoor playspaces (Brown & Burger, 1984; Campbell & Frost, 1979; Frost & Campbell, 1985; Frost & Klein, 1979; Parnell & Ketterson, 1980; Pellegrini, 1987; van Andel, 1985). Much of the written material on playgrounds focuses on the preschool age groups, and is concerned with the structural design of playspaces, or analyzes the hazards or safety aspects of playgrounds. "Judging from the relative number of studies of school-age and adolescent play as compared to play during the preschool years, one might come to the conclusion that children stop playing after they enter the first grade" (Glickman, 1984).

Most information that is available on playgrounds has been written within the last twenty years. During the 1960's, a "playground movement" began in the United States that strongly recommended improvements in the design and maintenance of playgrounds (Frost, 1985). About the same time that the playground movement began, two studies, Hole (1966) and Wade (1968, suggested existing playgrounds did not support children's play behaviours, thus children were ignoring the provided play spaces. "The designs of our environments have not yet accepted children's activities and their play as the most necessary function of early life" (Pollowy, 1977, p. 320). The concerns of these authors would seem to be even more imperative when it is realized that children between the ages of four and twelve spend a great deal of time in kindergarten and elementary school, and that play and playgrounds are often cited as domains which supplement a child's classroom learning. Playgrounds still do not adequately meet the expectations of either children or adults, and research is greatly needed to analyze the aspects of design, equipment, behaviours, and interactions that occur within playgrounds (Hayward, Rothenberg, & Beasley, 1974).

A general picture of what present North American playgrounds are comprised of can be determined by examining data collected by Frost and Klein (1979), and the American National Elementary School Playground Equipment Survey (Bowers & Bruya, 1988). Frost and Klein conducted an overview of the popularity of the different types of equipment found within playgrounds of the United States. The rankings, based on how common the items were among all the playgrounds surveyed, from the most common items on playgrounds to the least common, were the following: monkey bars, slides, seesaws, and merry-go-rounds (p. 61). In the American National Elementary School survey, two hundred and six playgrounds were studied, and from the observations a list of 3,070 equipment items was compiled. From this list, the following were the ten most common forms of apparatus: chinning bars, swings, overhead ladders, flat slides, fireman's pole, balance beams, monkey bars, seesaws, parallel bars, and geodesic domes. The results also revealed that few playgrounds had features that considered the special abilities and needs of handicapped children. It could be interpreted that many of the current playground designs are strongly influenced by traditional apparatus and formats, closely replicating the designs and expectations of play areas from the first part of this century. It is also indicated that varying levels of abilities (eg. infants and preschoolers) are not likely to be considered in most existing playground designs (Bruya, 1988a).

Johnson (1935) considered the effects of different amounts of play equipment on the play and social behaviours of young children. With greater selections of equipment, there were fewer undesirable play activities and disturbances in the play endeavours of the children. With less apparatus, there was less exercise but a greater amount of organized activities and sand play. Weilbacher (1979) observed dynamic settings in which parts and sections of play apparatus could be moved and restructured by the children, and static play space with mounted, secured equipment. Subjects from the dynamic play space demonstrated more non-locomotor activities on the equipment, such as carrying, lowering, and lifting, and were observed more frequently hanging, flipping over, and swinging. Although these last three skills were also noted in the static environment, Weilbacher suggested they were less common because the equipment could not be manipulated to create new situations in which the children could practice such skills. Children in the static environment did show higher levels of locomotor behaviours off, round, and o the equipment. Weilbacher related the higher levels of locomotor skills in the static setting to the children's search for novelty by exploring every possible approach and angle of the equipment. The author concluded the research by stating that it was important not to have one type of environment favoured more than the other, because both the static and dynamic settings provided opportunities to practice specific skills that expanded the overall abilities of the children.

Observations of pre-school and school age children on three different playgrounds indicated consistent preference for certain items (Naylor, 1985a). Slide skills were the most commonly performed, followed by swinging skills, then climbing activities.

Certain play activities which combined the physical and social aspects of play were even more popular than either the slides or swings. Two examples of this were a wooden fort structure which encouraged children to climb, interact, and fantasize, and a suspended cable-pulley system which required activity and co-operation from its' participants.

Hayward, Rothenberg, and Beasley (1974) compared and contrasted the activities noted on three types of playgrounds (traditional, contemporary, and adventure), and focused on the age groups that made use of the play spaces. The contemporary design accounted for the highest number of overall users. Adventure playgrounds had the lowest overall user ratings, while the traditional site was in between. School-age children comprised 44.58% of the individuals that attended the adventure playground, but only minor proportions of the school age subjects participated on the traditional and contemporary sites (20.84% and 22.21% respectively) (p.144).

The research indicates that each playground, design and equipment often dictated what play activities were performed. These different constraints or challenges assisted in defining different types of play spaces. Traditional playgrounds encouraged very specific and discrete skills for short periods of time because the equipment generally was of single purpose design and for minimal numbers of participants. In comparison, the behaviours on the contemporary playground were of longer duration and involved more continuous types of activities because the elements of the play area provided more options for greater numbers of children.

It has also been found that playground apparatus was used similarly between different playgrounds (eg. slides, swings, water play areas, etc.), but there were considerable differences in the amount of use. "In each playground there is an area which emerges as most used by school-age children, accounting for about one-third of the total number of observations for that age group. At the traditional playground the primary feature was the swings ... At the contemporary playground, the sand areas were most used ... At the adventure playground, the clubhouse areas were the most used" (Hayward, Rothenberg, Beasley, 1974, p. 147-148). It was speculated that these variations could be related to preferences to some apparatus, design, location, colour, and novelty. "For example, one of the slides at the contemporary playground was built on a cobblestone mountain which had tunnels running through it. The slides were novel and interesting and were the most popular features of the playground. By contrast, the slides at the traditional playground were smaller, rarely used by school-age children ... Although the sliding experience at these two playgrounds cannot be strictly compared, the amount of novelty and variety in the experience may make it more popular at one place that at another" (Hayward, Rothenberg, & Beasley, 1974 p. 148).

The above research reviews the types of playgrounds, the forms of equipment, and how they are used by the children. For greater understanding into the choices of equipment and play spaces, it is necessary to analyze the types of activities performed in the different types of playgrounds and their forms of apparatus.

Hayward, Rothenberg, and Beasley (1974) utilized frequency counts and timed observations to record behaviours of children on three types of playgrounds. Some areas and pieces of equipment were frequented more than others, but the amount of time spent on each item during observations could vary a great deal. On the traditional playground, the five most frequent activities were swinging, water play, monkey bars, connective play, and seesawing. The five activities that were played the longest were the same as listed above with the addition of arts and crafts, and the omission of seesawing. At the traditional playground, the activities observed were easily described because the actions coincided with the use of the specific equipment (eg. sliding, swinging, and arts and crafts accurately depict the kinds of behaviours noted). In general, the most frequent activities included many physical challenges or physical skills, but not a great deal of social interaction or creative involvement. The amount of time spent with each activity was also fairly limited.

In comparison, the most frequent activities on the contemporary playground involved multiple equipment, water play, sitting, dressing, and sand play, while the activities played the longest were the same except for the addition of arts and crafts, and games, and the omission of sitting and dressing. The terms used to describe the behaviours on this type of play site reflected the increased complexity of the different types of equipment that could be included in the descriptors, and in the range of activities noted during the period of observation with one piece or region of apparatus. "In general, this type of activity focused on the flow of behaviour taking place on the equipment, since the essence of the activity was not limited to one piece of equipment for extended periods of time. The close proximity of the features of this playground undoubtedly contributed to the nature of these play sequences (Hayward, Rothenberg, & Beasley, 1974, p. 153).

The most frequent activities in adventure playgrounds were clubhouse, building, talking, passive activity, and fixing up house, while the longest duration activities were the same. The modal activity on the adventure playground was clubhouse, but the term "clubhouse" did not describe on specific behaviour or action. Instead, it was a term that represented a combination of activities that were characteristic to these sites (eg. reading, eating, talking, and arts and crafts). The unstructured design of the adventure playground was credited for the diverse types of activities that were observed, in that the different levels of abilities and interests of the subjects were accommodated. The children played at this site for the longest, and this too was attributed to a type of environment that could cater to each child's specific needs and interests.

VanValkenburgh (1987) found the contemporary design was used more frequently by children for longer periods of time. Observing behaviours of third grade children on either a traditional or creative playground, Strickland (1979) also discovered that children showed a preference for the creative playground and there were differences between the playgrounds in the types of cognitive and social play. Brown and Burger (1984) indicated that " ... contemporary designs do not promote educationally desirable social, language, or motor behaviours to any greater extent than do playgrounds with less contemporary designs" (p. 616). This was not to suggest that the behaviours of children were the same on all of the play space designs, but instead revealed that each type of playground offered different knowledge and experiences which made contributions to a child's learning during play. One playground design was not more beneficial or more effective than any other type, but certain types and combinations of apparatus were associated with specific types of behaviours and interactions. It was clearly indicated that the preference of the contemporary playground over the other forms of playgrounds was not because the quality of play experiences was more superior, but that perhaps there were greater opportunities for more varied types of play activities and challenges.

Frost and Campbell (1985) found that the type of playground (traditional and creative) had an effect on the types of play behaviours in grade two children. Forms of physical or functional play were common to both the traditional and creative playground, but a higher percentage of physical play (77.9%) occurred on the traditional site, as compared to 43.7% physical activities on the creative playground. The creative playground did have a dominant influence on the level of dramatic play observed in children; 37% of behaviours on the creative playground reflected some form of dramatic play, while less than 3% of dramatic activities accounted for involvements on the traditional play area.

Frost and Campbell (1985) found that swings were the most popular choice on the traditional playgrounds, followed by the merry-go-round, seesaw, games with equipment, climber, and slide. Children on the creative play space preferred the playhouse, the climber, sand play, swings, seesaw, and finally slides. These results are similar to the observations recorded by Hayward, Rothenberg, and Beasley (1974). The dominant choices of the children in both play environments revealed a strong trend towards equipment that moved or which had movable parts and action-oriented apparatus was consistently chosen over forms of static equipment. Frost and Campbell (1985) suggested that traditional playgrounds seemed to be poorly equipped because opportunities for dramatic play and mixed forms of play were limited.

Play and Gender

Play, playground behaviours, and activity levels of the two genders has been analyzed in some detail by a few researchers, although this remains a relatively new field of study (Frost & Klein, 1979). Wetton (1980) found gender variations in intensities and types of play is likely established before the nursery or preschool level. This was determined by observations conducted on the play patterns of three and four year olds on play apparatus at nursery school. Male subjects showed higher rates of chasing and vigorous activity, while girls tended to wander or became involved in sociodramatic play relating to "house" or "dress-up". Lever (1978) analyzed play activities of ten and eleven year old children, and found that female subjects were limited in terms of body movements and vocal expressions, and that the area of play was considerably smaller than that of their male counterparts. Girls also had a strong preference for indoor play. Male subjects more often chose to play outside, and participated in various team sports or fantasy play (war, pirates, good guys and bad guys), in larger groups of peers from a wider variety of ages. Campbell and Frost (1985) found similar play characteristics in that grade two boys became more involved in dramatic play and a wider range of games with rules. Grade two girls showed that they were less physically active, and social patterns with peers reflected parallel play rather than small or large group interactions. From these studies, gender differences appear to begin before the pre-school years, and the discrepancies seem to continue into the early school years.

Frost and Campbell (1985) considered the implications of gender on the playground involvements in grade two children. Both boys and girls showed about the same levels of functional or physical play on traditional environments (74.7% for males, 81.1% for females), but males showed a greater decrease in the levels of functional play when they moved to the creative play space (34.1%) than did females (only down to 53.4%). These authors suggest that the environment may influence the amount of dramatic play in young males.

During observations of grade two boys and girls, Myers (1985) observed that boys preferred the use of play equipment and settings that would allow the involvement of a large number of participants (the climbers, ball games, and dirt mounds), while girls typically chose smaller playgroups which became involved in quieter, less vigorous activities. Sluckin (1981) found similar results in five to eight year olds. Boy's play emphasized physical strength, competition, and achievement, was rough and tumble, and required larger play spaces. Girl's were more sedate, and settled into a wide variety of quieter games such as hopscotch or rhymes. Another researcher, van Andel (1985), noted differences in the activity patterns, in that elementary girls were more likely to engage in movement with fixed play apparatus (swings, slides, climbers), and elementary boys participated more in ball activities (football, tennis, basketball) and activities with basic materials (rock, sand, wood, water). Boys also showed more interest in play activities that involved plants and animals (looking at bugs, picking plants, chasing squirrels).

Beth-Halachmy (1980) documented the play behaviours of elementary school children during the recess periods and noted differences in the physical activities and social contexts between the genders and age groups. Social group size tended to increase with age, and there was a rise in the amount of personal contact during play activities. The differences between the genders in social behaviours was minimal in the pre-school years, but increased as children entered grade school, around grades four to six. The selection of play activities followed a similar trend in that the play of primary grade children was homogeneous, with a majority of the activities being active games or ball games. Sex differences in play activities did not seem to appear until the intermediate grades, where boys spent much of their time in large groups participating in active or ball games, and the girls socialized with smaller groups playing in less active endeavours (talking, playing jacks, sitting).

Lindsay and Palmer (1981) supported the findings above with their study of Brisbane elementary school children. They too found that girls preferred to play in small groups with frequent changes of activities, while their male counterparts were more often found in open spaces playing highly organized games with large groups of players. It was discovered that the boys had strong preferences towards games that required strategies and plans, and which had high levels of running freely, chasing, and dodging; physical prowess seemed to be an important factor. The girls' behaviours seemed to fulfill the more traditional female images, with their activities occurring in smaller spaces and being of calmer nature. There was more turn taking and cooperation, and the female players seemed more accepting of other children's different levels of abilities and skills. One major contrast that the authors alluded to was the males' form of play seemed to be based in the development of gross motor skills, wile the females' activities tended to emphasize rhythm and fine motor control.

Lindsay (1984) further elaborated on the previously mentioned data in his research of the play behaviours of Canadian school children. Games were a popular and common item among all the age groups and subjects, although there were noticeable differences between younger and older subjects, and between the genders. Of 116 types of games observed, 61 were played only by girls, 22 by boys, and the remaining 33 were participated in by both sexes. Lindsay emphasized girls showed a larger variety of games than boys. This seemed to influence the children's play patterns, as boys had to remain involved with the less adaptable large group activities, whereas girls, with the smaller numbers and greater diversity in activities, could quickly change to other involvements. Thirty-five percent of all the games included some form of ball handling skills, but throwing, catching, and running were more common in boys games than girls. Girls games included more rhythmical activities and jumping skills. Lindsay (1984) found that girls under nine years tended to prefer chanting, skipping, and rhythmical clapping, but also participated in some of the tag games engaged in by their male peers. Children over ten years of age played in games that required much throwing and running, although catching was not always a necessary element. The older children's activities tended to have greater degrees of physical skill and eye-hand coordination, while the younger age groups' games required simple skills and usually involved some kind of social and physical contact.

While the social aspect of the games appeared to continue to develop as a child ages, the amount of physical contact seemed to diminish as the need for physical comfort and security decreased. Crum and Eckert's (1985) research supported the above findings of age-related skills, and also presented significant gender differences in play organization, activity orientation, and the size of play groups. Males had higher age correlations with specific play behaviours and reflected higher scores in organization, orientation, and play group size.

Borman and Kurdek (1987) examined the stability and complexity of the playground games by elementary school children. Recess activities of second and fifth graders were observed and recorded on a list depicting 22 different playground activities. One year later, researchers returned to the same school and subjects to re-test student involvement. Significant grade, gender, and grade-gender interaction effects were revealed. Grade twos spent more time than the fifth graders playing kickball, tag, bars, and watching others, while the older subjects spent more time playing football and soccer. Male subjects tended to spend more time with football and kickball, while the females performed more jump rope, hopscotch, and bars. Grade-gender effect was noticed only at the grade five level with boys in kickball. In the results from the next year of the experiment, the third graders spent more time with chasing and soccer, while their older counterparts were more involved in the organized sports of basketball, football, four square, and volleyball. Male-female stereotypes were reinforced, with girls choosing tetherball, watching others, bars, and hopscotch. Boys chose kickball, dodgeball, soccer, football, and baseball. In summary, the older children participated more frequently in organized games or team activities, with boys more likely to be engaged in highly competitive team games than girls. Girls' play seemed to cater to small group activities where there was an interpersonal or social emphasis, while the play of boys often reflected a highly structured, rule oriented, and team organized setting. These findings coincide with the insights that have previously been presented by other researchers.

Butcher's (1991) preliminary examination of the normative data from a playground skills test indicated that separate norms for both girls and boys would be necessary for each of the separate playground subtests. Boys consistently out-performed the girls on each of the subtests, with scores being significantly different between the two genders. This suggested that the appeal of different forms of equipment would vary according to age, and that children of different ages would perform different playground activities. In turn, different playground tests would have to be developed to accommodate different age categories and equipment specifications in order to best reflect the variations and ranges of performance among the different age levels and genders.

Play activities can become so characteristic of a particular play area or population that "cultural norms" become established. Different situations or settings (econiches) may have specific "cultural norms" that must be performed in order for participants to be completely involved in the activities and to be accepted by peers. School playgrounds are primary examples of econiches where certain behaviours and activities can be identified as being culturally normative, where an individual not possessing these skills could be at a disadvantage. Physical cultural norms are especially important to children within a school or playground setting because a degree of peer influence exists, and certain abilities and proficiencies are needed in order to conform and partake in the accepted behaviours (Lindsay & Palmer, 1981). "The content of a child's play and the rate with which she[he] moves through the developmental sequence of play is in part a function of the specific culture she[he] lives in" (Frost & Klein, 1979, p. 30).

To comprehend the cultural skills that a specific econiche required would involve systematic analysis of individuals in the settings. In the econiche of a school playground, " ... play would have to be defined as completely possible, both with quantitative and qualitative measures of internal predispositions to be playful, and behaviourally through activity and preference data ... as wide-ranging a sample of children and contexts should be used as possible, incorporating the literature on cross-cultural, social class, and ethnic diversity in both play and developmental stages" (Barnett, 1990, p. 149). Although an analysis of culturally normative playground skill might emphasize physical skills, the impact of the other developmental domains and the environment can not be overlooked; "Play does not occur 'in a vacuum', rather it happens within a context. This context will have physical and social dimensions. Without an understanding of what that context is and how it affects a child's play, we cannot hope to gain a full understanding of the phenomenon" (Naylor, 1985b, p. 1).

Tool Development

Present forms of training for play activities usually involve assessment of performance, and intervention and reinforcement of the desired behaviours. The PREP Play Skill Program (Watkinson & Wall, 1982) is an example of one such tool which has been designed to decrease the impact of motor and play deficiencies in mentally handicapped children. Forty-two play skills were identified in the play patterns of non-handicapped children, with each skill analyzed for the critical elements of performance.

Such a program enables instructors and therapists to specifically identify deficits in play performance, and assists in the prescription and remediation of environmentally and socially appropriate skills. This instrument is, however, limited to pre-school or fundamental play tasks, and is specific to the context of indoor play environments. A tool that expanded upon the skills within an outdoor play environment and with elementary age levels would be highly beneficial. A playground instrument similar to this would allow therapists or teachers to choose a number of environmentally-appropriate skills to be assessed, and individualized instruction could then be given on the necessary tasks.

Butcher (1991) recently created the first norm-referenced Playground Skills Test which objectively measured the motor skills and safety of playground performances in elementary school children. Observations of playground activities of elementary school children were conducted. Butcher then determined a representative number of skill components that were consistently utilized on the playground. The four main skill components of the testing criteria were: a) balance and agility on playground equipment elevated off the ground; b) confidence and skill in climbing ability; c) upper body strength as demonstrated by suspending the body from bars and ropes; and d) risktaking or the level of confidence needed to perform activities that have degrees of potential harm.

The tasks that the subjects performed in a controlled indoor environment simulated the conditions and situations that would be experienced on playground apparatus. The subjects' performances were assessed according to the speed and time of their actions, the attainment of height on climbs, the number of rungs travelled, the increased distance covered in jumping over a crevice, and the greatest number of manners, with the highest degrees of risk, in which an individual could discover to safely cross a climber. The scores for each individual's test were tallied and combined with the overall group results to determine the playground test's reliability, objectivity, and construct and content validity. Group results were also utilized to establish initial normative data. From the data collected, it was determined that the test was both valid and reliable, and that it would be valuable in research on the development of playground skills.

Other forms of assessments relating to play activities have been developed. Crawford and Griffin (1986) designed a Playground Movement Confidence Inventory (PMCI) to assess movement confidence in relation to the performance decisions that occurred in children when playing on playgrounds. The authors conducted observations of the activities performed on playgrounds by children, and compiled a pool of movement tasks. These tasks were screened by a jury of experts and tested during a series of field trials to determine which skills were most age-appropriate for fifth graders and which were most representative of the playground activities for that particular group. The final list of behaviours was comprised of climbing, balance, hanging behaviours, and dismounting, and reflected the performance dimensions of height or level, speed, and inverted body position. The skills that formed the test components were: a) climbing and sliding down a high slide; b) doing a jungle gym climb and stunt without the support of the hands; c) performing a knee hang from a horizontal bar and then dropping off; d) climbing to a horizontal bar, hanging, and dismounting; e) doing a hipcircle on a horizontal bar and dismounting; and f) climbing onto a platform from a cargo net, then dismounting (p. 9).

Three sub-scales were used in the evaluation of these skills, revealing the enjoyment, competence, and harm that the subjects perceived as they performed each of the tasks. Competence was the greatest factor in whether the children would perform the movements, but it was discovered that each of the three factors combined in different weightings or each of the skills. Although competence appeared to be a critical factor, the presence or absence of either enjoyment or harm also had significant influence. No significant differences in the competency were noted among ethnic groups, special populations, or the different genders, but children apparently base much of their participation and involvement in playground activities on the degree of skill or competency that they possess or think they possess.

Although assessment tools for play and playgrounds have been presented, there is still a great need and demand for information and programs that deal with play development and playground analysis. Before further intervention programs or tools can be established, various steps must be taken and several other factors must also be considered. Dattilo (1987), in his overview of assessment tools, recreation programs, and skill development in the mentally handicapped, noted that certain components had to be acknowledged. Dattilo's first characteristic was that systematic instructional programming, along with opportunities for practical experiences, were the primary tools in teaching skills to individuals. Task-analyzed skills should reflect chronologically age-appropriate leisure skills which considered the typical or "normative" behaviours for individuals of the same age group. The enhancement of the specific skills and activities would also develop the levels of physical fitness through increased levels of activity, and in turn, expanded the range of participation by developing skills that would increase the opportunities or choices the individual had for recreational involvements. In summary, Dattilo recommended that it was important for individuals to develop repertoires of skills that reflected age-appropriate community base leisure skills, and that these community based leisure skills and programs be based on activities from a wide range of recreational contexts.

To develop programs and processes that would assist the individuals in acquiring basic play activities and knowledge, further analysis and evaluation of the play patterns of non-handicapped children would be required. The previous studies mentioned have identified some of the basic skills and activities noted on playgrounds (running and locomotor activities, climbing, hanging, swinging, jumping down, and balancing), but it is critical that these activities be reviewed for the adaptations that occur when performed in different playground settings. Also, age- and culturally-appropriate tasks must be identified to reveal the activities required for minimal participation. A tool or checklist, which could assess the play repertoires of children, and which could identify the vital tasks needed for participation in playground activities, would be desirable. This information would also be useful to enhance the equipment, facility designs, and community programs to better meet the physical, social, and emotional needs of children and their play activities. "By understanding what physical ability means to children, we should gain more insight into their performance, level of intensity, and persistence within the athletic realm. With this knowledge, we can begin to maximize children's involvement in sport [play, and recreation]" (Duda, 1987, p. 142).

CHAPTER 3

METHODS AND PROCEDURES

General Research Design

The playground studies of Watkinson and Muloin (1989) and of this thesis involved a "natural experimental" format (Anderson, 1971), otherwise known as a field study. Observers entered a naturalistic setting (playgrounds) and made note of the behaviours occurring within the play spaces, on the apparatus, or with the equipment. Observers remained as unobtrusive and non-participatory as possible. The monitoring of play behaviours was conducted during the lunch hours and recess breaks at various public schools within the city of Edmonton. Periods of viewing the play activities were controlled by utilizing cassette walkmans which played tapes with sound signals indicating the appropriate time intervals for observation and recording of information. By conducting the research in this manner, it was anticipated that the impact of the presence of observers would be minimized, and that the culturally normative behaviours on the playgrounds would occur spontaneously and naturally.

Preliminary Study - Watkinson and Muloin, 1989

The intent of this study was to record behaviours that could eventually be identified as culturally normative to school playgrounds. Initially, observers ventured out to school playgrounds during the free play periods of lunch or recess, and made anecdotal references, or " ... factual descriptions of the meaningful incidents and events which the data collector is observing in the lives of clients or subjects" (Stumbo, 1983, p. 59).

Observers randomly selected subjects and sites within the schoolyard, and made detailed notes of all the activities and equipment used during the viewing period. A time sampling method (Levy, 1982), using sound signals from a cassette tape player controlled the duration of the observation periods and the recording of information. Each subject was monitored for ten seconds, then data recorded for the following ten seconds. This procedure continued with the same subject for one minute, resulting in a total of three periods of observations and three periods of information recording. From the broad list of skills collected from the observations, common behaviours were categorized according to the environment (eg. Open Space, Hard Surface, and Play Apparatus) and nature or intent of the activity (eg. Ball Skills, Climbing Apparatus, Swings, Games). Physical skills associated with the particular categories were then itemized (ie. Climbing Apparatus - swinging with both arms; hanging from knees on bars; climbing up/down). The categories and activities were drafted into a checklist format, which would allow observers to mark off any incidents already indicated in the instrument, but also provided spaces in which researchers could add items which were new or absent from the lists.

Thesis Research Design

This stage of research continued to employ nonparticipant observations of children's activities on playgrounds during recess breaks and lunch hours using the Watkinson & Muloin (1989) checklist. The design was based upon interval time-event sampling procedures (Kerlinger, 1973; Levy, 1982; Mck.Agnew & Pyke, 1987; Sulzer-Azaroff & Mayer, 1977), whereby unobtrusive observers monitored playground activities of randomly sampled grade one and grade three children for thirty second intervals which alternated between observations and data recording. Each subject was observed during intervals that occurred continuously over a period of five minutes. Observers coded all the activities noted during the observation intervals onto the checklist which provided frequency counts for each of the categories and basic skills listed. Frequency counts were calculated according to the age, gender, and grade divisions within the sample. These figures formed the base for comparisons within and between the different activities and subject groupings.

Sample

All children in this research were from regular classrooms of five different schools within the Edmonton Public School system. Principals of the specific schools were personally contacted. Each school provided class lists of their grade one and grade three classrooms, and two classrooms were randomly drawn from each grade level. Letters of consent were given to the parents of the children in the four classrooms of each school, with the request to indicate whether or not the child would be participating in the study (Appendix A).

Consenting subjects were divided by grade level and gender, resulting in pools of grade one females, grade one males, grade three females, and grade three males. Subjects were chosen by draws out of the hat. Although the original intention was to have an equal number of subjects within each of the subject pools, it was difficult to account for children being absent due to illness and children going home for lunch.

Substitutions were selected, but absenteeism also impacted this group. If the substitutions could not be used, then a candidate from the same classroom, age group, and gender was selected. As a result, a total of 139 children, 6 to 10 years of age, participated in the observations: 60 from grade one and 79 from grade three. The gender breakdown of the subject pool was 66 females and 73 males (see Table 1).

In calculating the results for this study, each mark on an observer's checklist was regarded as an incident or an event. One thousand one hundred and four incidents (1,104) were recorded, with grade one subjects providing 494 events and grade three providing 610. To equate all the data to sample sizes of 30 subjects in each pool, correction factors were applied to the overall frequency counts, and to each of the playground categories' frequency counts. The correction factors were determined by multiplying the grade three female figures by 30 (the desired number of subjects) and dividing by 36 (the actual number of female subjects); the grade three male figures were multiplied by 30 (the desired number of subjects) and divided by 43 (the actual number of male subjects). The corrections are indicated in the titles of the tables with the phrase "adjusted for sample size".

TABLE 1

SUBJECT PROFILE

		# of Subjects	Mean Age	Age Range
Gr. 1:	**Females**	30	6.9	6.3 - 8.1
	Males	30		
Gr. 3	**Females**	36	9.0	8.1 - 10.0
	Males	43		
	Total	79		

TABLE 2

FREQUENCY COUNTS FOR PLAYGROUND EVENTS

		Gr. 1	Gr. 3	TOTALS
Gender:	**Females**	243	237	580
	Males	251	373	624
	Total	494	610	1,104

Physical Settings

All observations were conducted during the months of May and June on the playgrounds of five different schools. Each of the schools differed in the design of the play area and in the types of equipment and apparatus available. One school had only open space, with baseball diamonds and soccer fields marked off in the grass. Small equipment was available for the children to take out during their recess and lunch breaks. The other four schools also had large amounts of open space, but were equipped with various forms of apparatus, ranging from the traditional items of swings (tire, flat seat), monkey bars, and slides (twisted, tube, inclined plane), to those that were more creative or adventure oriented (climbing platforms, fixed tires and tubes, bridges, poles). Small equipment (dodgeballs, baseballs, skipping ropes, ball gloves, frisbees, footballs, soccer balls) were often provided by the schools, or the children brought them to school from home.

Observations

The technique used in performing the observations was a combination of interval recording and event recording (Levy, 1982). During interval recording, observations are conducted during equal intervals of time, with the observer noting events which occur during those viewing sessions. For event recording, an investigator will indicate each time a discrete or itemized activity is exhibited while subjects are monitored. In utilizing these methods, the range of play activities on a playground was verified, and the frequency counts described what play activities were most often observed.

The length of time designated to each interval is an arbitrary decision which is usually based upon the existing knowledge that a researcher has about the subject matter. In most cases, an established standard is selected as the unit of measure for the interval (Brandt, 1972; Mck.Agnew & Pyke, 1987). For this study, the standard divisions of time, 30 seconds and 5 minutes, were the units of measure. The rationale behind these decisions was that the shorter intervals may limit the number of events that could possibly be observed. With the emphasis of this study being to capture the range of play activities, it was believed that a time constraint would have a negative influence on the quality and quantity of data collected. An interval of thirty seconds would allow more events and activities to be noted, resulting in data that might better reflect consistencies or trends in the activities of the subjects. Longer observation sessions would also promote a more continual analysis of play activities by permitting the observers to monitor activities for longer intervals with fewer interruptions. This supported the efforts in gaining substantial quantities of information while maintaining the desired quality of data.

To preserve the naturalistic settings and unobtrusive nature of the research, observers were instructed to remain on the outskirts of the play areas and activities as much as possible, to avoid contact or involvement with any of the children from the school, and to give brief descriptions to any inquiries made by curious children. Using headsets and cassette players with tapes that had sound signals recorded at thirty second intervals, the observers monitored their subjects in the order listed on their checklists for a total five minutes for each individual. The observation sessions alternated between thirty seconds of viewing activities, followed by thirty seconds of recording every activity noted during the previous time frame. In the situation where an observer temporarily mislocated a subject during that particular observation period, the signal tape was allowed to run for one minute, or the equivalent of two sound signals. Over this period of time, the observer would try to relocate the subject. If successful, the monitoring would continue from the interval where the interruption occurred; if the subject continued to elude the researcher, the monitoring of that child was discontinued, and the next subject on the checklist observed. If and when the lost subject was located, observations commenced from where they were left off. Thus, each subject was observed for five intervals, with each interval reflecting an unlimited number of playground activities and events that had been observed and recorded.

Observers

Eight individuals that were trained as observers for this study were either students or staff from the Department of Physical Education and Sport Studies at the University of Alberta, or were staff members from the Westmount YMCA who were responsible for particular courses in the youth and child programs. Seven hours of training involved discussions of the observation procedures and the recording instrument, activity analysis with videotaped examples, and five practical sessions which included visiting several school playgrounds to observe and monitor elementary school children. The training was also used to modify the checklist to increase reliability.

The practical sessions on school playgrounds were essential in establishing that each observer had an understanding of the procedures of the instrument. The preliminary sessions were also used to determine the inter-reliability of the instrument and the observers. Inter-reliability was calculated according to the number of agreements obtained by observers as compared to the events recorded by a master observer. The master observer, the researcher of this thesis, was selected on the basis of having had the previous experience and training with the Watkinson and Muloin (1989) study. Following each practical session, each observer's responses were compared to the "master key". The number of agreements divided by the total number of agreements provided interobserver reliability (Johnson & Bolstad, 1973):

$$\frac{\text{number of agreements with master observer}}{\text{number of disagreements} + \text{number of agreements with master observer}} \text{ x } 100\% = \%\text{ of agreement}$$

Five practical training sessions were required to ensure observers attained a minimum of 75% or greater criterion of reliability.

Instrumentation

The instrument formulated by Watkinson and Muloin (1989) was the preliminary checklist evaluated for content validity, and was used initially in this experiment to record the activities noted on the school playgrounds. Through actual use of the instrument in the processes of establishing rater reliability, it became apparent that alterations in the format and content of the tool were necessary in order to develop a checklist that was clearly understood in terms of its practical application and the definitions of different environments and activities. The checklist also had to be adapted slightly so that the setting and events that were noted in elementary school playgrounds during the warmer months of the year were effectively captured. Many of the refinements in the instrument were a result of comments from the observers in training, or from consistent errors or trends in the recording of data, noted when rater reliabilities were calculated. The following review of training sessions and the resulting alterations in the instrument will reveal the further development of the checklist to its final design.

Session #1

The original instrument contained eight environmental categories (Slide with Ladder, Swings, Horizontal Ladder/Bar, Teeter-totter, Fixed Tires/Tubes, Merry-go-round, Open Space, Small Equipment), with a total of eighty-two activities within all those categories. This first session was used to familiarize the observers with the items on the checklist and the procedures of observation. The master observer selected one child on the playground, and announced the intervals for observing and recording. Following the completion of an observation session with one subject (five minutes), the observers reviewed their responses in comparison to those collected by the master observer. Agreements in responses were noted, while disagreements were discussed and explained. Often the differences in responses were due to unfamiliarity of the observers with all the elements of the checklist, or a lack of understanding of the terms listed under each of the environmental categories. These procedures were continued for four more different subjects in different areas of the playground. No reliability calculations were performed.

Session #2

In the first test with the tool, the interobserver agreement ranged from 48% - 74%, with the average of the eight raters at 63%. During actual observations, observers were encouraged to record activities that were not listed in the checklist, or to indicate which activities or terms seemed confusing or overlapped other elements. From these comments, and from the discrepancies in the recording of events, it was indicated that items of walking, sitting, and standing needed to be included in the overall list of activities. These items would account for observation intervals where the subject was relatively inactive or uninvolved. A "Standing" element was listed on the checklist, with the definition including any sedentary form of activity such as walking, sitting, and observing. Other adaptations included: adding "underducks" to Swings; adding "jumps up and down", and combining "handstands" and "cartwheels" to form "gymnastic stunts" under Open space; and including "dodges peer/object" and "soccer dribbles" in Small Equipment.

Session #3

Due, possibly, to the small variations in the instrument, and to the fact that the observers were becoming more adept at recording events, the reliability scores improved slightly, with the range extending from 53% to 81%, and a mean of 65% for the overall group. The addition of "Standing" to the checklist appeared to be an all-encompassing item for the observers, as it was an item that was predominantly marked, while other play activities which were noted during these same "standing" events by the master observer, were unnoticed in most of the observers' results. It was becoming apparent that the observers were possibly focusing more on inactivity and non-play than more vigorous play activities. Observers were reminded to record all the events that occurred during the observation intervals, and a review of the definitions and descriptions of the environments and activities was done to eliminate any misunderstandings. No adaptations were made to the tool.

Session #4

Although the reliability ratings continued to improve (range = 69% - 80%; mean = 74.3%), with some of the observers attaining above the 75% criterion, a majority of the raters were experiencing difficulties in accurately recording the events observed on the playgrounds. The "Standing" item was still posing the problem of dominating the results. There were categories such as "Merry-go-round", "Teeter-totter", and "Horizontal ladder/bar" that were not being utilized or overlapped with other activities under other headings. Games were consistently being added to the instrument by the observers as forms of activities. From the calculated results, and through consultations with other experts, the instrument was re-drafted to accommodate the changes suggested by the preliminary testings, with the intent to improve the tool's accuracy in recording the range of activities found on playgrounds. Firstly, the two categories that were not being utilized were removed from the instrument. Only one of the selected schools contained a merry-go-round and teeter-totter, and in the process of upgrading the play space, that school removed both items. The removal of such equipment was in response to a new School Board policy not to include such pieces of play apparatus in school sites due to safety concerns, and in the belief that these items were not as conducive to fitness, physical skill, and social development as other forms of equipment. It was also noted that these two traditional playground items were slowly being replaced by creative playground elements in public playgrounds and park facilities. To support the content validity of the tool, it was essential to remove both elements and all their associated activities.

Various types of games were consistently being observed during observation sessions. In the initial draft of a playground instrument, Watkinson and Muloin (1989) had included a games category. It was the initial belief of this researcher and two other advisors that the contents of this category might overshadow the identification of basic playground activities, or that the list of items under such a category plus the list of activities in other environments would overwhelm anyone trying to apply the tool. It became apparent that games had to be recognized as an integral element for the construct of Playground Activities, and that the content validity of the tool would be jeopardized if a reference to games was not included. Reviewing the list of games obtained from Watkinson and Muloin's research, and summarizing the comments from the raters, a series of activities were identified under the heading of "Games", including tag, hopscotch, jump rope, dodgeball, soccer, volleyball, softball, murderball, seven-up, pig-in-the-middle, bounce and clap, football, and other (specify). The activities were generically named so that the variations in rules, boundaries, and numbers of players for each of the games could be encompassed. Individual "basic skills" were not listed beneath each of the items because the "basic skills" were likely listed under other headings. By creating the category in such a manner, common activities involving organized groups or "Games" were acknowledged, but the analysis of each of the specific game's basic skills would have been a redundancy in the tool.

Observers also revealed that the heading "Horizontal ladder/bar" was obscure because subjects were performing activities listed under this heading, but on apparatus that was not necessarily horizontal ladders or bars. The category was renamed "Climbing Apparatus", and the activities were re-examined as well. "Climbs vertical ladder", and "Climbs down vertical ladder" were combined into "Climbs up/down ladder"; "Front rest on horizontal bar" was redefined as "Front support on horizontal bar"; "Hangs momentarily with flexed arms" changed to "Hang with flexed/extended arms"; "Walks across top of horizontal ladder" was recognized as a form of balancing, and created the item "Balances/walks on narrow surface"; and another method of mounting or dismounting equipment was defined in the element of "Jumps down or onto equipment".

The refinement of the Small Equipment category involved a great deal of collapsing of categories. Several of the individual items had a similar focus in the type or intent of the activity being performed, making it difficult at times for observers to judge which of the items was truly being observed. "Throwing a ball" for distance, at a target, or at a moving target all defined different intents for throwing, but the essential element was throwing the ball. The activity was re-defined as "Throws ball". "Kicking..." a stationary, moving, aerial ball, or a ball against the wall emphasized variations on the basic skill of kicking, so these four items were collapsed into "Kicks ball". The activity of "Throws and catches with a glove" had repetition with the items of "Throws ball" and "Catches with glove", and was removed from the list. "Throws and catches..." categories for football and frisbee were retained as separate elements because of the novelty of the equipment used. "Dodges peer/object" was deleted from the category because observers revealed that they were regarding this activity as items listed under Open Space, such as running forwards or backwards, running and jumping, or running away and chasing.

The review of Open Space and Swings, and the item "Standing" completed the reworking of the playground instrument. Most alterations within the category of Open Space resulted from the collapse of similar categories. The new item of "Runs away/chases others" combined two separate items, as did "Gallops/skips". "Wrestling" was the only activity added. Under Swings, the item of "Spins swing" was added to the list of activities. The item "Standing" was withdrawn from the checklist because it was anticipated that as an activity it would, in the data analysis, skew the results. It was an activity that was common to almost every subject and school, and the frequency counts for that activity alone would likely overshadow any counts obtained in other categories. Another issue with this term was that the raters continued to use it as a "catch-all" item, marking it off consistently, and at times overlooking more crucial events. A final point considered with this circumstance was that this study was to identify the types and ranges of activities on a playground. It was decided that standing, sitting, walking, and observing were not the types of culturally normative activities that were intended to be analyzed, and therefore should not be represented on the checklist. As a result, with all the additions and deletions, the final product contained seven environmental categories, with a total of eighty-six individual activities. It was this final draft of the instrument that was tested for rater reliability in the fifth practical observation session (see Appendix B).

Session #5

During this training session, a majority of the observers achieved the criterion rating for reliability. The one tester that was unsuccessful received additional training and achieved the criterion in a sixth observation session. Rater scores ranged from 73% - 90%, and the mean for the group was 79%. Few comments or activities were listed by the observers about the new format of the instrument, and in the discussions that followed the training session, raters found events easier to record and with greater accuracy. With reliability established and observers confident with the procedures and tool, actual data collection was then conducted.

Validity of Research Project

Objectives for this study included an examination to determine if the playground instrument's activities were actually performed by elementary school children on playgrounds. It was also to verify that the types and ranges of activities listed were representative of culturally normative activities that could be observed on playgrounds outside the experiment's physical setting and sample populations.

Certain factors, which can have negative impact upon research, had to be considered in relation to the influence they might have upon the procedures and results. Rothstein (1985, p. 61 -71) listed several factors (history, maturation, instrumentation, mortality) that were defined as potential threats to the research. One of the first concerns was that it was possible that some of the subjects were more or less experienced with some of the activities encountered on the playground. Differences in abilities could impact the types and ranges of activities exhibited by the subjects. A related concern was the influence of the physical education programs on the "free play" activities of the children. An aspect of a game presented during the physical education class sessions may have had a determining effect upon the types and ranges of activities that the subjects revealed. These factors were controlled through random selection of children, thereby providing a sample that was representative of the capabilities found within the general population. The physical education programs were discussed at each of the schools to determine what was being taught in the classes at the time of the observations. Comparing this information to the results from the individual schools, the influence of course content on the play choices of the children was then inferred.

Experimental mortality was avoided by rejuvenation of the subject pool through random selection of substitute subjects. Factors of maturation (growth and development) were not a major concern because the observations of the subjects were not conducted over an extended period of time, nor were any subjects re-viewed at a later date following their first observation. Therefore, the effects of maturation for the entire sample were minimal.

There was a risk with this study that the subjects, if they became aware that their play behaviours were being monitored, would react differently rather than exhibiting true free play endeavours. To prevent such circumstances, research was conducted unobtrusively, decreasing the potential for a Hawthorne effect.

Instrumentation was another possible threat to this study. For research to be valid, the methods and devices used to record or measure results must be consistent and accurate throughout the experimental procedures. With the measuring devices of this study being the observers, it was important to recognize the possibilities of observer bias, observer drift, and observer sensitivity (Kidder, 1981; Rothstein, 1985). The first concern, observer bias, was reduced by selecting observers who had a background in the fields of children and movement, but who had no previous experience with the playground instrument, the selected schools, or the subjects. Observer bias was controlled by limiting responsibilities of the raters to only experimental aspects that were directly related to the recording of playground events. Observers were not required to prepare or analyze the events recorded, nor were they directly informed of the manners in which the collected information was to be treated or summarized. By integrating these precautionary measures, the influence of personal views and interpretations of the research were reduced.

The degree of threat that observer drift and sensitivity had on the study was decreased through the instruction and practical experiences given to the observers in their training sessions. During the training sessions, the objectives and procedures of the research were clearly described, with great care given to the description and definition of activities that were listed in the instrument. It was emphasized that the subjects were to be observed for the full thirty seconds, and that all the events noted during that time period were to be recorded during the entire thirty seconds of the recording interval. Through the insistence that the observations focused continuously on the subjects, and that the recordings focused on the instrument, the possibility of drift was diminished.

Throughout the five practical test sessions, administered before actual data collection began, the sensitivity of the observers to the events and activities that were to be observed was gradually increased to more acceptable and consistent levels. As observer sensitivity increased, accuracy and consistency within and between the raters developed, resulting in the final calculation of reliability to be at or above the criterion. With the heightened levels of sensitivity, it was ensured that the discrimination of each rater was satisfying the standards expected in the research, and that the sensitivity in the observation and recording processes was comparable among all the raters.

External Validity

External validity makes reference to the degree of generalization that can be made of an experiment's results and observations to other populations, treatments, or contexts. To enhance the generalizability of the playground research, various threats to external validity had to be considered (McK.Agnew & Pyke, 1987; Rothstein, 1985).

The subjects selected to be studied should be a " ... representative sample of the target population - of the people you really want to study" (McK.Agnew & Pyke, 1987, p. 206). The target population was determined to be children between kindergarten and grade four, so it was believed that the sample population should be drawn from within those particular confines. Grade one and grade three were selected to provide the subject pools because these divisions were mid-range from the target population, and would likely reveal the extent of activities that were culturally normal for lower elementary school children on playgrounds. Although the selection of specific grades may have had a limiting effect on the generalizability of the study's results, the choice of the two grades spanned an extensive range of ages and abilities within the target population. This in turn was interpreted as being representative of younger children, and play activities associated with the appropriate age and gender groupings. Variability within the sample also strengthened the generality of results in that a large number of observations were conducted which resulted in a large number and range of events recorded.

One of the main objectives with this study was to develop a valid and reliable assessment tool of playground activities, therefore it was essential that the research considered the range of settings and equipment found in elementary school playgrounds. Five different elementary school playgrounds were used during the study; none of the schools were exactly identical in the design of the play spaces, nor did any of them have the same types or equal amounts of equipment. Although this variability presented some difficulties in the design of the assessment tool and in the descriptions of environmental categories and activities, it did ensure that the instrument and the results could be generalized to almost any form of outdoor play space or form of equipment. The realistic nature of the observational sessions also supported the utilization of the assessment tool in more realistic circumstances.

Although the generalizability of the playground instrument was established by listing a broad range of environments and activities, and each of these items was defined and described to encompass some of the possible variations that might be observed, it was conceivable that there would be incidents observed that were not itemized on the tool, or that did not seem to fit perfectly into the existing elements. This difficulty was eliminated by informing the observers that if they had any unique events, or were unsure in the recording of certain events, to indicate such situations on their test sheets by writing the event in one of the spaces provided. This allowed the raters to continue to record the frequency of such events without interrupting or jeopardizing the results from that particular observation session. Once the observation session was completed, the raters could then make brief notes about the event, and at the completion of the test day, discuss the situation with the researcher. It is for this reason that some skills, listed with the research results, are not listed on the final draft of the instrument. Some novel activities consistently appeared during the actual testing sessions, and thus became items for consideration in the results.

Treatment of Data

The events recorded from the observations provided frequencies of occurrence for each of the seven environmental categories as well as each of the activities listed beneath these headings. The frequencies of occurrence for the different categories and their five most frequent activities were transformed into percentages by forming ratios with the recorded events over the total number of events collected x 100%. Adjustments were made to some figures by calculating the total events and percentages in relation to a subject total of 30 (n=30) for each of the different age and gender categories. The data and events were then analyzed by grade and gender. Results of these analyses were summarized into various tables, with trends in the data revealed through descriptive analysis.

CHAPTER 4

RESULTS

This study examined aspects of a playground instrument which noted the play performances of elementary school children on playgrounds. One research objective was to establish the reliability and validity of the tool, while another objective was to describe the range of activities that could be regarded as culturally normative for elementary school playgrounds. The data was collected according to age and gender, revealing differences and preferences in play activities.

Frequency counts and percentages from each of the playground categories and of the different activities were determined. Results revealed the range and prevalence of the different play items. To investigate the influence of age and gender on the results, detailed descriptive analysis was used to examine the gender, grade, and gender-grade influences upon the playground observations.

Analysis of Playground Activities

In calculating these results, the overall total of events observed was tabulated (1104 events), and then the total events by grade and gender were also calculated (see Table 3). These figures were then manipulated to provide ratios and ultimately percentages of events. Some of the numbers were then adjusted to reflect what the totals and percentages would be if all subject groups had thirty individuals (n=30). Adjustments were necessary only for the grade three females and grade three males. This was done by forming a ratio using 30 over the actual subject number (Females=36, Males=43), and multiplying the resulting factors to the appropriate age and gender totals. Event totals were then examined according to the percentage of occurrences by grade and gender.

TABLE 3

Frequency Counts and Percentages of Total Events

	Grade 1		Grade 3		Total	
	Events	**%**	**Events**	**%**	**Events**	**%**
Female	243	22.01	237	21.36	480	43.47
Male	251	22.73	373	33.78	624	56.52
Totals	494	44.74	610	55.25	1104	99.99

(Gr.1 Females n=30;Gr.1 Males n=30;Gr.3 Females n=36;Gr.3 Males n=43)

TABLE 4

Frequency Counts and Percentages of Total Events

Adjusted for Sample Size (n=30)

	Grade 1 Events	**%**	**Grade 3 Events**	**%**	**Total Events**	**%**
Female	243	25.55	197	20.72	440	46.27
Male	251	26.39	260	27.34	511	53.73
Totals	494	51.95	457	48.05	951	100

Of the total number of events observed (Table 3), 494 were of grade one children (44.74%) and 610 of grade three (55.25%). With sample size adjusted into the calculations (Table 4), the total number of events was relatively close, with the grade ones accounting for almost 52% of the total observations, and the grade threes representing about 48% of the event total. In the grade one group, 243 observations were made of females and 251 of males, respectively representing 49% and 51% of the grade one data. In both the regular and adjusted scores for grade three, the male data was somewhat higher than the female tallies, with the male event counts accounting for over 50% of the totals. Differences occurred in the total number of events in both the age and gender categories, with both grades relatively close in event totals, once adjustments were made. Males had more events overall. There was little difference in the total number of observations by gender in grade one, but a greater difference was noted in the total number of events between the genders in grade three.

To increase the understanding of what playground environments and apparatus were most prevalent in use by different subject groups, it was essential to analyze the collected data according to each of the environmental categories listed on the instrument. Frequency counts were tabulated for each of the seven categories, and percentages were obtained by forming ratios with the environmental events over the total number of events recorded. Adjustments in the numbers for sample size were only performed on the frequency count summaries (the first table after each of the different environmental headings), to better reveal the relative standings. Adjustments were not made on the tallies for each of the activities within each of the environments, as it was more important to note which items were observed more or less frequently, regardless of adjustments for sample size.

TABLE 5

Frequency Counts and Percentages of Events for Playground Environments

ENVIRONMENT	EVENTS	%
Fixed Tires/Tubes	20	1.81
Slide	26	2.35
Swings	70	6.34
Climbing Apparatus	172	15.57
*Open Space	377	34.14
Small Equipment	176	15.94
Games	263	23.82
TOTAL	1104	99.98

(*94 events were collected at a school with only Open Space)

The results provide a general perspective of which environments were more consistently noted in the observations. Open space, games, and small equipment were the top three categories, but it must be remembered that some of the events within each of these headings may have overlapped or contributed to the total events in other categories. For example, most of the games observations were usually noted in the open spaces of the playgrounds, and some of the games or activities recorded in the open spaces also utilized small equipment. In essence, interrelationship between these three categories and the number of events was highly possible. To gain further insight into the relationships of these categories with the performances of the subjects, it was necessary to isolate the results from each of the categories and relate them to the particular gender and grade groupings. As well, the number of events recorded under each of the activities listed within the environmental categories were totalled, and the resulting figures were used to rank the various skills according to the grade, gender, and grade-gender divisions.

1. FIXED TIRES/TUBES

TABLE 6

FIXED TIRES/TUBES

Frequency Counts and Percentages of Events

(Adjusted for Sample Size n=30)

	Grade One		**Grade Three**		**Total**	
	Events	**%**	**Events**	**%**	**Events**	**%**
Female	0	0	8	40.00	8	40.00
Adjusted	0	0	7	41.18	7	41.18
Male	7	35.00	5	25.00	12	60.00
Adjusted	7	41.18	3	17.65	10	58.82
Totals	7	35.00	13	65.00	20	100
(Gr.1 Females n=30;Gr.1 Males n=30;Gr.3 Females n=36; Gr.3 Males n=43)						
Adjusted	7	41.18	10	58.83	17	100

TABLE 7

FIXED TIRES/TUBES

Frequency Counts of Activities According to Grade and Gender

Skills	**Events**		**Events**	
	Gr. 1	**Gr. 3**	**F**	**M**
Climbs up/down treads	4	6	4	6
Climbs in/out	-	-	-	-
Climbs under	-	-	-	-
On top: sits/crouch/lie	1	2	-	3
On top: stands	-	1	1	-
On top: walks	-	1	1	-
Jumps down from top of tire	1	1	1	1
Jumps from tire to tire	1	1	1	1
*Balances between tires	-	1	-	1
TOTALS	7	13	8	12

(*denotes a new item in instrument; -denotes no observation of event

Two school playgrounds contained fixed tires/tubes, which may explain why they were the least utilized of the seven environments observed (accounting for less than 2%

of all the playground events recorded). Grade three used the structures more than the grade ones (adjusted, 59% versus 41% of the fixed tires/tubes events), with male subjects participating on the equipment for about 59% (adjusted) of the observations (see Table 6). "Climbs up/down treads" was the primary activity across age and gender divisions, suggesting that it was a "modal" activity which was required for at least minimal participation on this form of playground apparatus. Grade one subjects performed a smaller range of activities (a total of 4) as compared with the grade three subjects (a total of 7) (see Table 7). The specific activities performed by the two genders was slightly varied, but the number or range of activities that each gender took part in was the same (5 items each). Of all the activities listed on the checklist, only two items (climbs in/out, climbs under) revealed no record of observation in either of the grade or gender pools. One new skill was added (balances between tires) (see Table 7).

2. SLIDE WITH LADDER

TABLE 8

SLIDE WITH LADDER

Frequency Counts and Percentages of Events

(Adjusted for Sample Size n=30)

	Gr. 1 Events	%	Gr. 3 Events	%	Total Events	%
Female	9	34.61	0	0.00	9	34.61
Adjusted	9	36.00	0	0.00	9	36.00
Male	13	50.00	4	15.38	17	65.38
Adjusted	13	52.00	3	12.00	16	64.00
Totals	22	84.61	4	15.38	26	99.99

(Gr.1 Females n=30;Gr.1 Males n=30;Gr.3 Females n=36;Gr.3 Males n=43)

Adjusted	22	88.00	3	12.00	25	100

TABLE 9

SLIDE WITH LADDER

Frequency Counts of Activities According to Grade and Gender

Skills	**Events**		**Events**	
	Gr. 1	**Gr. 3**	**F**	**M**
Climbs up ladder frontwards	1	-	-	1
Climbs up ladder backwards	-	-	-	-
Slides down ramp	2	-	2	-
Slides down spiral	3	2	-	5
Slides down tube	2	-	1	1
Slides on seat frontwards	1	-	1	-
Slides on seat backwards	2	-	-	2
Slides on tummy, head first	1	-	1	-
Slides on tummy, feet first	-	-	-	-
Slides on knees	1	-	-	1
Walks or runs down ramp	-	-	-	-
Walks or runs up slide	9	2	4	7
TOTALS	22	4	9	17

(*denotes a new item in instrument; - denotes no observation of event)

Three school playgrounds contained some form of slide with ladder. Slide with ladder activities were most prominent with the grade one subjects and with males, respectively accounting for 88% and 64% of the total observations (adjusted, Table 8). Grade ones showed a greater range of sliding skills than the grade threes, and the male subjects showed a greater range of activities than the female subjects did (Gr.1 = 9, Gr. 3 = 2; Females = 5, Males = 6; Table 9). The slide environment appeared to be unique because it usually required the ability to perform climbing as well as sliding, as most sliding equipment had some form of stairwell or ladder that had to be ascended before the ride down. Interestingly, "climbing up" was not a highly ranked activity; activities such as walking or running up the slide, and sliding down appeared to have more priority. It could also be suggested that a low number of observations for the third grade indicates the slide has little appeal or is unchallenging for the older age groups. Most of the slide items were observed, with only three elements not revealed in the observations.

3. SWINGS: TRADITIONAL/TIRE

TABLE 10

SWINGS: TRADITIONAL/TIRE

Frequency Counts and Percentages of Events

(Adjusted for Sample Size n=30)

	Gr. 1 Events	%	Gr. 3 Events	%	Total Events	%
Female	5	7.14	24	34.29	29	41.42
Adjusted	5	8.77	20	35.09	25	43.86
Male	12	17.14	29	41.42	41	58.57
Adjusted	12	21.05	20	35.09	32	56.14
Totals	17	24.28	53	75.71	70	99.99
(Gr.1 Females n=30;Gr.1 Males n=30;Gr.3 Females n=36;Gr.3 Males n=43)						
Adjusted	17	29.82	40	70.18	57	100

TABLE 11

SWINGS: TRADITIONAL/TIRE

Frequency Counts of Activities According to Grade and Gender

Skills	Events		Events	
	Gr. 1	Gr. 3	F	M
Mounts/Dismounts swing	-	8	6	2
Climbs onto moving swing	-	-	-	-
Rides swing while sitting	1	15	6	10
Rides swing while standing	-	7	5	2
Rides swing, lies on stomach	-	-	-	-
Ride swing, hangs with arms	1	3	-	4
Pumps while sitting	-	11	4	7
Pumps while standing	-	1	-	1
Dismount moving swing, bottom of arc	-	3	1	2
Dismount moving swing, top of arc	-	-	-	-
Underducks	-	-	-	-
Spins swing	6	2	2	6
*Hangs from pole while on swing	-	1	-	1
*Pushes others on swing	9	2	5	6
TOTALS	17	53	29	41

(* denotes a new item in instrument; - denotes no observation of event)

Three schools had swings within their playground. Of the playground apparatus, swings was the second most popular equipment with the children. Swings were used by the grade three subjects for over 70% (adjusted) of the total swing observations, and males were more often observed using the equipment (56% of the events as opposed to 44% of the events for females, adjusted). The range of skills noted in both ages and genders revealed interesting tendencies. The grade threes performed a fuller range of activities on the swings, and the activities performed were often more complex or demanding than those that were commonly performed by the grade ones (Gr.1 = 4, Gr.3 = 10; Table 11).

The grade ones were observed performing very basic or simple activities with the swing, and with less height or swinging action. These tendencies became more apparent when the most common activities according to grade and gender were analyzed. Grade three showed no events in only four different activities, while the grade ones were not observed in ten of the fourteen activities listed under the Swings category. Of the activities performed by the younger age group, the most prominent activities were two items that require minimal individual ability: "pushes others on swing", and "spins swing". The top swing elements for the grade threes were "mounts/dismounts swing", "rides swing while sitting", "pumps while sitting", and "rides swing while standing". The first two tasks could be regarded as modal activities because they were essential for fuller participation on the swings, while the last to items for the grade threes seemed to be extensions of the basic tasks which required a greater degree of individual competence for successful and spontaneous participation. Other activities that appeared to be more demanding and were performed only by the grade three subjects included "pumps while standing", "dismounts moving swing, bottom of arc", and "hangs from pole while on swing". These differences in the level of activities performed between the two grades could suggest variations in the development of swinging activities.

Discrepancies in swinging activities were also noted with the two genders. Males showed a fuller range of activities (10 items, Table 11), while their female counterparts were observed in only half the tasks listed in the assessment (7 activities of 14, Table 11). Although both the basic tasks and some of the more complex items mentioned were performed by both sexes, the males more frequently practiced the more difficult or more demanding activities (eg. pumps while sitting; rides swing, hanging with arms; pumps while standing; dismounts from bottom of arc). This could indicate some differences in physical abilities between male and female children, but it may be more of a reflection of male tendencies to participate in play activities that have higher, more complex physical demands, or that require strength and prowess. Females appeared to prefer simpler, less physically demanding activities (Lindsay, 1984).

Of the assessment items listed under swings, four were never observed during the study. "Climbs onto moving swing" was removed from the checklist, as most children throughout the data collection were observed stopping the swing and then mounting it. The three other unobserved items could have been a result of rules implemented by the school, or warnings reinforced by parents or guardians. Many schools and parents disallow parachute jumping (dismounts moving swing, top of arc) for safety purposes. Sitting on a swing is often recognized as the safest and most efficient position for a swing. Another possible reason for these items not being observed could be that the activities were either above or below the abilities or interests of the children. Parachuting from a swing is a complex task and has a high degree of risk, which may have been beyond the comfort zones of grade ones and threes. Lying on swing seats is often done by children who are smaller ad cannot yet pull themselves up to the height of the swing, thus lying on the seat may be the next lower task to sitting on the swing.

4. CLIMBING APPARATUS

TABLE 12

CLIMBING APPARATUS

Frequency Counts and Percentages of Events

(Adjusted for Sample Size n=30)

	Gr.1 Events	%	Gr.3 Events	%	Total Events	%
Females	80	46.51	13	7.56	93	54.07
Adjusted	80	47.90	11	6.59	91	54.59
Males	69	40.12	10	5.81	79	45.93
Adjusted	69	41.32	7	4.19	76	45.51
Totals	149	86.63	23	13.37	172	100
(Gr.1 Females n=30;Gr.1 Males n=30;Gr. 3 Females n=36;Gr.3 Males n=43)						
Adjusted	149	89.22	18	10.78	167	100

TABLE 13

CLIMBING APPARATUS

Frequency Counts of Activities According to Grade and Gender

Skills	Events		Events	
	Gr. 1	Gr. 3	F	M
Climbs up/down ladder	31	15	25	21
Front support on horizontal bar	2	-	1	1
Jumps up and grabs overhead bar	14	-	4	10
Hangs with flexed/extended arms	26	3	15	14
Swings on bar, pumps legs	17	-	8	9
Hangs and travel on bars	3	-	2	1
Balances/walks on narrow surfaces	15	1	7	9
Hangs, hands and knees, adjacent bars	8	-	6	2
Hangs, hands and knees, one bar	6	-	5	1
Scales vertical pole	8	2	6	4
Skin the cat	-	-	-	-
Jumps down/on equipment	12	2	10	4
*Roundabout/Drop the baby	1	-	1	-
*Chicken fights	3	-	-	3
*Hangs from knees	3	-	3	-
TOTALS	149	23	93	79

(* denotes a new item in instrument; - denotes no observation of event)

All the schools except one had climbing apparatus. Climbing apparatus was dominated by grade ones (Gr.1 = 89%, Gr.3 = 11%, adjusted, Table 12), with both genders participating at comparable levels of frequency (93 events for females, 79 for males, Table 12). Overall however, females were observed more often performing the climbing apparatus activities, but both genders performed almost the same range of activities (13 activities for females, 12 for males, Table 13). "Climbs up/down" and "Hangs from flexed/extended arms" were the most common activities noted on the checklist in both the age and gender categories, suggesting that these tasks were possibly the modal or basic activities required for involvement on climbing apparatus. Only one task, "Skin the cat", was not observed. This task requires a great deal of arm strength and shoulder flexibility, and the actual move could be regarded as risky because it involves hanging from an inverted position, moving through to a small mid-air rotation, and landing on the feet. It could be that the subjects used in these observations had not encountered or mastered the activity, or that it was an activity that children of this age were not yet ready to exhibit in their regular play patterns.

5. 0PEN SPACE

TABLE 14

OPEN SPACE

Frequency Counts and Percentages of Events

(Adjusted for Sample Size n=30)

	Gr. 1		**Gr. 3**		**Total**	
	Events	**%**	**Events**	**%**	**Events**	**%**
Female	71	18.83	85	22.55	156	41.38
Adjusted	71	21.45	71	21.45	142	42.90
Male	114	30.24	107	55.73	221	58.62
Adjusted	114	34.44	75	22.66	189	57.10
Totals	185	49.07	192	50.93	377	100
(Gr.1 Females n=30; Gr.1 Males n=30; Gr. 3 Females n=36; Gr. 3 Males n=43)						
Adjusted	185	55.89	146	44.11	331	100

TABLE 15

OPEN SPACE

Frequency Counts of Activities According to Grade and Gender

Skills	**Events**		**Events**	
	Gr.1	**Gr. 3**	**F**	**M**
Runs quickly forwards	95	120	93	122
Runs quickly backwards	4	3	3	4
Runs away/chases others	18	21	13	26
Jumps down from equipment	5	3	1	7
Jumps up and down	17	11	12	16
Hops on one foot	4	-	3	1
Runs and jumps over things	4	-	2	2
Runs and jumps onto something	1	-	1	-
Split jumps	-	-	-	-
Stride jumps	1	-	1	-
Cossack kicks	-	2	-	2
Gallops/skips	11	11	13	9
Wrestles	9	12	2	19
Log rolls	2	-	-	2
Somersaults	-	-	-	-
Gymnastic stunts	5	4	7	2
*Climbs up/down hill	9	5	5	9
TOTALS	185	192	156	221

(* denotes a new item in instrument; - denotes no observation of event)

All the schools involved with this study had open space in their playgrounds. About the same number of events were recorded for both grades of subjects (Gr.1 = 185, Gr.3 = 146, adjusted, Table 14), but males showed a slightly higher preference for the activities that the females (Males = 189 events, Females = 142; adjusted, Table 14). Grade ones had a fuller range of activities (14 of 17 tasks, versus 10 of 17 for the older group; Table 15), but some of the tasks not frequently observed in the grade threes were activities that this age group had more than likely mastered (eg. hopping, running and jumping, rolling). Males showed considerably greater incidents of running, jumping, chasing others, and wrestling, while the female subjects were more frequently observed performing gymnastic stunts. The two most frequent activities for both age and gender divisions were "Runs quickly forwards" and "Runs away/chases others", indicating that open space may be the environment where some of the greatest amounts of vigorous activity take place. "Split jumps" and "Somersaults" were not noted in any of the subjects, and may be the types of activities that would be more frequently observed when the physical education classes involve dance or gymnastics. It could be suggested that these two items be eliminated from the assessment, and that individuals using the tool add other activities noted on their particular school playgrounds during various times of the year, throughout the different units of the curriculum. The addition of "Climbs up/down hill" was a novelty item because one school had excavation occurring next to the school, and the children used the hills of dirt and gravel in their play.

6. SMALL EQUIPMENT

TABLE 16

SMALL EQUIPMENT

Frequency Counts and Percentages of Events

(Adjusted for Sample Size n=30)

	Gr. 1 Events	%	Gr. 3 Events	%	Total Events	%
Female	9	5.11	57	32.39	66	37.50
Adjusted	9	6.43	47	33.57	56	40.00
Male	24	13.64	86	48.86	110	62.50
Adjusted	24	17.14	60	42.86	84	60.00
Totals	33	18.75	143	81.25	176	100

(Gr. 1 Females n=30; Gr. 1 Males n=30; Gr. 3 Females n=36; Gr. 3 Males n=43)

Adjusted	33	23.57	107	76.43	140	100

TABLE 17

SMALL EQUIPMENT

Frequency Counts of Activities According to Grade and Gender

Skills	**Events**		**Events**	
	Gr. 1	**Gr. 3**	**F**	**M**
Throws ball	15	23	16	22
Jumps and straddles moving ball	-	8	8	-
Throws ball to wall, catches rebound	-	3	3	-
Catches tossed ball	7	22	13	16
Throws and catches football	-	-	-	-
Throws and catches frisbee	-	-	-	-
Bounces and catches ball	-	14	5	9
Basketball dribble	3	7	2	8
Catches with glove	-	-	-	-
Kicks ball	6	38	11	33
Soccer dribble	1	17	2	16
Heads ball	-	-	-	-
Strikes aerial ball	-	5	3	2
*Slides to base	1	4	1	4
*Dodges ball	-	2	-	2
TOTALS	33	143	66	111

(* denotes a new item in instrument; - denotes no observation of event)

Each of the schools had a variety of small equipment available to their students. Overall, males and grade three were observed more frequently with the small equipment (Males = 60%, Females = 40%; Gr.1 = 23.57%, Gr.3 = 76.43%; adjusted, Table 16). Grade three subjects had a fuller range of skills than the grade ones (Gr.3 = 11, Gr.1 = 6; Table 17), but this trend could be reflective of the older age group's ability to perform more of the challenging or complex tasks on the list. In reviewing the tasks that the grade ones did perform, it was discovered that their activities were dominated by the simpler tasks, such as throwing, catching, kicking, and dribbling, suggesting that this age group was still developing the basic fundamental tasks. When analyzing the play preferences according to gender, the range of tasks was the same for both groups (15 activities out of 11, Table 17), but the males participated more frequently in the activities (Females = 66, Males = 111). Throwing and kicking were the two primary items performed by both the gender and age categories, with grade three and males showing greater incidence of both tasks. It is recommended that throwing and catching the football or frisbee be deleted from the standard form of the tool, as these items were generally forms of equipment not frequently used in elementary schools. Individuals using the tool could add other forms of equipment and the associated activities to the items on the list so as to reflect the common activities performed in that particular playground.

7. GAMES

TABLE 18

GAMES

Frequency Counts and Percentages of Events

(Adjusted for Sample Size n=30)

	Gr. 1 Events	%	Gr. 3 Events	%	Total Events	%
Female	69	26.24	50	19.01	119	45.25
Adjusted	69	32.09	42	19.53	111	51.62
Male	12	4.56	132	50.19	144	54.75
Adjusted	12	5.58	92	42.79	104	48.37
TOTALS	81	30.80	182	69.20	263	100
(Gr. 1 Females n=30; Gr. 1 Males n=30; Gr. 3 Females n=36; Gr. 3 Males n=43)						
Adjusted	81	37.67	134	62.32	215	99.99

TABLE 19

GAMES

Frequency Counts of Activities According to Grade and Gender

Skills	Events		Events	
	Gr. 1	Gr. 3	F	M
Tag	1	2	1	2
Hopscotch	-	-	-	-
Jump rope	5	3	8	-
Dodgeball	-	10	5	5
Soccer	10	111	10	111
Volleyball	-	-	-	-
Softball	-	-	-	-
Murderball	-	-	-	-
7-Up	-	-	-	-
Pig in the middle	-	4	4	-
Bounce and clap	-	-	-	-
Football	-	-	-	-
*Chinese baseball	34	25	34	25
*Hide and seek	1	19	19	1
*London Bridge	2	-	2	-
*Fantasy Play	12	-	12	-
*Song games	-	1	1	-
*Red Rover	8	6	14	-
*Races	8	2	10	-
TOTALS	81	182	119	144

(* denotes a new item in instrument; - denotes no observation of event)

Participation in games was about the same for both grades when adjustments were made for sample size (Table 18). Males showed a preference towards activities that related to sports and teams, and females towards various types of playground games and activities. Chinese baseball and soccer were the two games observed in both grades, but it must be remembered that the dominance of these games was probably influenced by the fact that they are often taught in physical education during spring. The range of activities performed by males was smaller than that of females (Males = 5 tasks compared to Females = 12; Table 19), supporting Lindsay's (1984) observations that males partake in fewer types of activities but play more frequently and for longer periods of time. The lower frequencies found in the grade one subjects reinforced the belief that this age group does not yet participate in activities that require teams or large group, due to perhaps to the fact that they are still developing social and physical abilities that would be required in such circumstances. A great number of the listed items were not revealed, and it is recommended that these items be removed until further observations can be conducted. The games observed on playgrounds may be the result of what had been covered in physical education classes, or the types and number of equipment that are available or allowed onto the playground during the recess or lunch breaks. It would be recommended to people using the assessment to add or delete tool items that best reflect the situations found within the subjects and the econiche being observed.

CHAPTER 5

DISCUSSION

This study addressed several questions which were analyzed throughout the process of the research. The major question dealt with the identification of culturally normative playground activities for elementary school children, of two genders and grade levels. Another vital element in the research was to establish the validity and reliability of a playground assessment tool which could be used to determine the range of children's playground activities. Through this study, it was to be determined whether the instrument contained appropriate items, whether consistent results could be obtained with several testers and test sessions, and whether the tool was easy to apply or "user friendly".

The Instrument

The assessment tool originated by Watkinson & Muloin (1989) appeared to be valid and reliable in that it consistently identified activities that were culturally normative for elementary school children. After training sessions with raters, some restructuring of the tool occurred, leaving 93 items listed within seven different playground categories. Following data collection, only 18 new activities were observed and subsequently added to the checklist. Twenty-three tasks were not observed, and therefore deleted from the tool. Reasons for removing these particular items from the tool were: the activity was deemed as too unusual (eg. climbing up the slide ladder backwards); the description of the activity would not promote safety, or it would be difficult in developing possible methods of intervention or instruction (eg. climbing onto a moving swing, dismounting a swing at the top of arc - parachute jumping); or the activities were highly dependent on the content of the school's physical education program (eg. throws frisbee or football, hangs from pole while on swing, split jumps, somersaults), or on certain types of equipment and environments.

It must be emphasized that the intent of the instrument was not to detail each and every activity that could possibly be done in playground environments by elementary school children. Instead, the assessment tool was meant to identify some of the more common activities that appeared to be essential for children to perform in order to have a minimal level of participation. It must be remembered that each school and its playground would have its own trends, rules, and design which would impact on the types of activities exhibited by the children who used the playsite, thus creating individual econiches with their own culturally normative activities. The instrument is designed as a guideline to observe the activities of the children particular to that playground. Items can be added or deleted that are relevant or irrelevant to the specific play performances, environments, and equipment.

The tasks listed on the instrument could be regarded as the basic or essential activities that are required for a minimal level of participation and interaction on a playground. During the training sessions, the items were scrutinized and clarified so that the play activities were clearly defined. This was the first step in defining the essential playground activities. The actual observation of these basic skills verified that these were typical, fundamental activities to elementary school children and playgrounds.

Hayward, Rothenberg, and Beasley (1974) noted that certain play activities were typical of certain playground environments, and in most cases, these modal activities were also the essential tasks for the specific environments. In this study, it was observed that certain tasks were more prevalent than others. These tendencies were, in part, related to the environmental design and the activities required to encourage participation. Based on the above rationale, each of the seven playground environments listed on the instrument had basic or modal activities identified. The modal tasks became the components for a further revision of the instrument that identified the most common or essential activities performed in playgrounds by elementary school children (Table 20).

TABLE 20
PLAYGROUND ACTIVITIES CHECKLIST

Fixed Tires/Tubes

Climbs up/down treads
On top: sits, crouches, lies

Slide with Ladder

Walks or runs up slide
Slides down

Swings: Traditional/Tire

Rides while sitting
Pumps while sitting
Pushes others
Mounts/Dismounts swing
Spins swing

Climbing Apparatus

Climbs up/down ladder
Hangs with flexed/extended arms
Swings on bar, pumps legs
Balances/walks on narrow surface
Jumps up and grabs overhead bar
Jumps down or on equipment

Open Space

Runs forward
Runs away/chases others
Jumps up and down
Gallops/skips
Wrestles

Small Equipment

Kicks balls
Throws ball
Catches tossed ball
Bounces ball and catches (successive)
Basketball dribbling

Games

Soccer
Chinese Baseball
Hide and Seek
Red Rover
Fantasy Play

Grade and Gender Effects

The various age and gender groupings revealed some trends in the preferences for playground categories and play activities. Once adjustments had been made for sample size, the frequency counts for the entire study were relatively close, with only grade three females having slightly lower totals than the other subject groups. Although some researchers have suggested that the types and intensities of play activities increase as children grow older, the frequency counts did not present similar conclusive results. In fact the data suggested that grade levels may be unrelated to rates of involvement, but the types of activities may vary greatly between the ages (Lindsay & Palmer, 1981; Collins, 1984; Borman & Kurdek, 1987; Hughes, 1991). Previous studies have also suggested that females show lower levels of involvement in playground activities, but this study reveals that all gender and grade groupings, except grade three females, participated at about the same frequencies. Grade three females had a lower event count than their male counterparts, and either gender in grade one (Table 4). Lindsay (1984) discovered that older females tended to gradually decrease their levels of activities and became involved in activities that were more sedentary and social. The third grade female results could indicate the beginning of this tendency. Grade three males were more frequently involved in play activities than any other group in this study. Despite sample size adjustment, the higher frequency counts could still relate to the difficulties in the subject selection process. Limitations in the interpretation of the levels of involvement for the older male subjects may exist. Grade three children were prominent in many of the playground categories and the associated activities. Grade three subjects accounted for 58% to 76% (adjusted) of the play activities recorded on Fixed Tire/Tubes, Swings, Small Equipment, while the grade ones were involved with the Slide and Climbing Apparatus for 88% and 89% (adjusted) of the observations respectively. The differences in the degree of involvements for the different playground environments between the genders was slightly less, with the male subjects ranging from 56% to 64%

(adjusted) involvement with all the play categories other than climbing apparatus and games. Females had 55% (adjusted) of the total events observed on the Climbing Apparatus and 52% (adjusted) in Games. Developmental age differences may be responsible for the discrepancies in the types and ranges of tasks performed, and that differences in gender could have a lower degree of influence on the play activities of elementary school children.

Slide with Ladder was one heading where there was considerable difference in the performances of the grade ones and grade threes. Grade ones played on the slide for almost 88% (adjusted) of the observations conducted, with the children showing all but three of the tasks from the list (Tables 8 and 9). In comparison, the grade three subjects were observed in only two types of slide activities, although both tasks were the ones later defined as basic slide activities. Apparently the activities on the slide were no longer of interest, importance, or challenge to the grade three children. Frost (1988) found that older children gradually withdrew from the activities of the apparatus on the playground, and became more involved with games and activities requiring small equipment and socialization. This trend was further substantiated in this study by the high frequencies in Small Apparatus and Games for grade three children.

The other playground category that the grade one subjects dominated was Climbing Apparatus (Tables 12 and 13). The grade three performed on five types of climbing activities, but those five tasks were ones identified as the modal items for the apparatus. These findings reinforced the identification of essential activities for playgrounds.

Male subjects predominated in all the playground categories except in Climbing

Apparatus and Games. Grade one males and grade three females had the higher levels of involvements for Fixed Tires/Tubes, but when the age levels of the two gender were combined, males had more incidents overall with the apparatus (Table 6). Grade one females were not observed on this apparatus, which could possibly suggest that these subjects were unskilled in this category. However, this was not likely the case as the grade one females had higher frequency counts than the males on the climbing apparatus than the grade one males (Table 13). The climbing abilities were likely present, but perhaps the interest was not, or the younger females did not find the environment appealing. Frequency counts for this type of equipment by the grade three females was higher than those of the third grade males, suggesting that the essential climbing activities can be exhibited by females. This observation supports that environmental influences, rather than skill deficiencies, may have determined the participation of the younger female subjects. Playing on the fixed tires and tubes might also be another way of interacting with male peers, or exploring what might be thought of as "male domain".

Open Space was another environment where the play activities of males were different from those of the females when analyzed across the age groups (Table 15). While both genders showed the same number of activities from the overall range of items, females participated less frequently in the activities of running, chasing, and wrestling, tasks which have been regarded by several authors as being typical of males (Borman & Kurdek, 1987; Hughes, 1991). Females exhibited more galloping and skipping, and gymnastic stunts, which have been typified as girl activities (Lindsay, 1984).

The stereotypes of activities expected in males and females also carried into the results noted in the Small Equipment (Table 17). Differences in the play activities were found between the genders, both within and across the two age levels. Although the female subjects had a slightly greater range of activities, the males revealed higher frequencies in forms of fundamental tasks (throwing, catching, kicking, dribbling) that would eventually allow them to partake in more team and sport activities. While the grade one males' participation with small equipment greatly exceeded that of the females (73% to 27%, respectively; Table 16), the differences in the levels of involvement had changed considerably by the third grade. Males, however, were still participating with small equipment more frequently (56% to the 42% for females, adjusted). These results could suggest the reinforcement of gender stereotypes, as boys are often encouraged to practice the acts of throwing, catching, and kicking in preparation for team and sport activities. Girls are often encouraged to take part in more feminine pursuits or activities that may develop into smaller, more social, group endeavours (Campbell & Frost, 1985; Lindsay, 1984; Lindsay & Palmer, 1981).

Some interesting results were revealed with the Games category (Table 18), with some of the data appearing somewhat contradictory to the analyses of events from the other play categories. Grade one female participation was considerably different from that of the grade one males, with grade three males, overall, showing greater rates of involvement. Although this finding may be somewhat affected by a greater number of male subjects in grade three, it could be assumed that the trend would be consistent. Females accounted for barely 20% of the total grade three observations in the Game's category.

A lack of fundamental ability and understanding of team concepts could be the key issues which determined grade one involvement in games. This can be supported by the fact that a majority of the grade one games recorded fell under the tasks of fantasy play or simple games and activities (tag, Red Rover, sing-song games). However, the highest frequency counts for grade ones in any of the tasks under Games occurred with Chinese baseball, a game which was taught in most of the physical education classes of the schools involved in the observations. This game involved the tasks of kicking, catching, and running, items which were not strongly represented in grade one results from Small Apparatus (Table 17). This seems slightly contradictory, but in fact suggests that if younger children are exposed to and instructed in the concepts of games and team activities, they may generalize class activities to free play times.

The recorded game activities of females across the age levels supports observations that girls tend to be involved in a greater variety of games and activities during free play periods (Lindsay, 1984). The males of this study were involved in only five activities from the list of games, with a majority of the events recorded under soccer or Chinese baseball. In Lindsay's (1984) study, boys were usually involved with sports or group games, playing for long periods of time, and seldom changing activities. With the grade one and three females, there was a greater variety of activities, involving various sizes of groups (individual to teams), and including very organized, traditional activities (Chinese baseball, hide and seek), and some that were more spontaneous and free (sing-song games, fantasy play). According to Lindsay, these activities are common to females, and the tendencies to choose small groups and less competitive, vigorous forms of play generally increase as girls age. Lindsay's observations are supported by the findings of this study.

Many of the observed play activities were common to all groups. Under Fixed Tires/Tubes (Table 7), the grade threes had a greater number of events and range of activities, but the frequency counts for the play activities were virtually the same. Grade one and three subjects were both observed, with comparable frequencies, in "climbs up/down treads", "on top: sits/crouches/lies", "jumps from top of tire", and "jumps from tire to tire". In analyzing the same data according to gender divisions, males had the greater frequency counts, but the range of activities was similar for both groups. A minimal overlap occurred in the types of activities that were performed between the two genders. With this playground category, no particular play activities were identified as being specific to either age or gender, however, the small discrepancies in the event scores for any of the activities could reveal that they are the most common and basic tasks for this apparatus, regardless of grade or gender. There were strong indications that the Slide category (Table 9) and its play activities were more frequently used by grade ones. Very few events were recorded for the grade three subjects on this apparatus (only 4 incidents in total), while the grade ones accounted for 22 of 26 events, and were observed performing almost all the tasks listed. The grade ones were more frequently observed running up the slide. Males were observed for more incidents overall on the slides than females. Only one skill appeared to be more prominent with the boys: sliding down a spiral slide. Females were observed in sliding activities on the ramp and tube slides, but no events were recorded for girls on a spiral slide. These results suggest that the slide activities, regardless of design, are probably more essential to the playground involvement of grade one children than grade three children.

The swing could be regarded as a major playground category for grade three (Table 10). Grade ones had a considerably smaller range of play activities which were generally simpler and less risky: rides swing while sitting, rides swing hanging from arms, spins swing, and pushes others on swing. Grade three subjects showed a fuller range of play activities which often reflected a slightly higher level of skill (eg. rides swing while standing, pumps swing while sitting, dismounts moving swing at bottom of arc). Male subjects were observed more frequently in a wider variety of swing activities. Females showed a smaller range of swing tasks, but the frequency counts between the two genders were not great enough to suggest any gender specific activities.

The climbing apparatus revealed a strong age specific tendency, but no strong gender associations with any of the play activities were noted (Table 13). Grade ones were dominant on the apparatus, having much higher event counts and a much more extensive range of activities. Interestingly, the only tasks that were observed in the third grade subjects were activities that overlapped with the most frequently performed tasks in grade one. It is believed that these incidents suggest that the most frequently observed items indicate tasks that possibly are prerequisite to the playground environment. Furthermore, the climbing apparatus seems to be more attractive to younger children, as revealed in the greater frequency of observations. Older subjects may no longer have the need to explore such activities and environments (as suggested by the limited number of items and observations on the climbing apparatus). When older individuals do become involved, they exhibit the basic abilities that allow for a minimal degree of participation and involvement. From the combined results of grade one and three, it appears that the activities of climbs up/down ladder, hangs with flexed/extended arms, balance, scales vertical pole, and jumps down or on equipment of the essential play activities required of any age level for a minimal involvement on playground climbing apparatus.

Careful consideration had to be given to the results from Open Space (Table 14). Total frequencies for each of the age groups were very similar, although the range of activities was slightly less for the grade three group. The greatest difference between the two groups occurred in the activity "runs quickly forwards", but this trend could be explained in several ways. Firstly, a higher level of running in the older children could be indicative of developmental differences, suggesting that this age group possibly had the greater coordination and stamina to allow for more vigorous activities. In turn, the refinement of the running actions would enable the older children to partake in more activities that further utilized this task. This is supported by the higher number of incidents for grade three subjects in some aspects of small equipment and games (eg. soccer dribble, soccer). As well, it appeared that grade one children had a greater interest in performing a larger variety of basic fundamental skills, while the older subjects showed less variety. This finding could suggest that the younger subjects used the play opportunities in open space more to develop and refine fundamental motor patterns, while older children may have used the open space to participate in activities that applied and generalized these activities.

In reviewing the results from Open Space with respect to gender, three activities require some examination (Table 15). "Runs quickly forwards" was the highest item for both genders, with males showing a slightly higher frequency count. Males tended to be involved in more vigorous activities, and in team or sport endeavours (soccer, dodgeball) that likely required running as a fundamental action. A similar explanation could be used to rationalize the higher counts for males in "runs away/chases other". The last item that implied male preference was wrestling. Females were observed participating in this activity, but males were involved in wrestling more than nine times as often. Wrestling, or rough and tumble play, has been investigated by several researchers (Hughes, 1991; Lindsay, 1984; Pellegrini, 1989), and the findings have suggested that this type of activity is more characteristic of boys' play than girls.

Developmental differences may account for the performance variations noted between the grade ones and grade threes with Small Equipment (Table 16). The frequency counts between the two groups were extremely different (Gr.3 = 107, Gr.1 = 33, adjusted), and the range and type of activities performed by the two groups were considerably different as well. The younger age group may indicate a lack of ability and proficiency, while the older groups' results suggest more consistent involvement with the activities, possibly suggesting a higher degree of skill with the items. Of the activities that are common and prominent to both age groups, fundamental motor patterns were once again revealed (throw, catch, kick). Throwing, catching, and kicking could be recommended as playground activities for younger children, while older children could be challenged with activities such as dribbling, rebounding, and striking.

Male involvements with small equipment were much greater than that of females, but the numbers may have been influenced by the slightly higher number of older males. Males participated considerably more in activities of kicking and soccer dribbling, and they were slightly higher in many of the other items that were performed in common with the females. Females had a greater variety of activities and tended to have greater or comparable frequency counts in activities that were individual or small group challenges (jumps and straddles moving ball), or fundamental skills (throws and catches ball, kicks ball, bounces and catches ball). The data does not reveal specific activities that were prevalent with either of the genders, but does suggest that small equipment was utilized more often by males.

Gender and age specific trends were noted for the Games category. Grade threes and females had the highest totals of events, with soccer making up a majority of those observations. Chinese baseball, hide and seek, and dodgeball were the most commonly played activities in the older age groups, while the grade ones showed preference for Chinese baseball, fantasy play, and soccer. The younger subjects had a greater range of play activities, and that range tended to include less structured and group oriented endeavours. The range of items for the older children was smaller, but generally reflected elements of teams, rules, or small groups (eg. soccer, hide and seek, Red Rover). Organized sport activities greatly dominated the behaviours of the males, while females participated in play activities that included team involvements as well as more recreational activities. Soccer and Chinese baseball accounted for the greatest portion of events for the boys, supporting Lindsay's (1984) findings where males tended to be involved in larger groups and team sports. Girls were also involved in Chinese baseball and soccer, but they had more incidents of other activities such as fantasy play, hide and seek, races, and jump rope. From these results, it could be summarized that males, and more specifically grade three males, had greater tendencies to participate in activities and games that were oriented to teams and sports, while females and younger children were involved somewhat more with activities that required certain types of physical abilities, but less structure in the play formats.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

Summary

The central focus of this investigation was to examine the validity and reliability of an assessment tool for children's play activities performed within playgrounds. Validation of the instrument was determined by examining the items listed on the checklist as to whether they were culturally normative for elementary school children on playgrounds. Reliability of the tool was determined by analyzing whether accurate results could be consistently collected with different raters, subjects, and settings. Observations were made of grade one and three children at several different elementary schools during the free play periods of lunchtime and recess. During the observations, interval-event recordings were performed, using the playground tool as the checklist for activities noted during the viewing periods. Frequency counts and percentages were tabulated for each of the items and playground categories, and the data was analyzed according to grade and gender. Adjustments were made to the data for sample size.

Reliability of the playground instrument was attained through the training sessions of the raters. Several practice sessions were held in order for the raters to become efficient with the tool, and it was throughout the training sessions that the instrument gradually transformed into its' final format. Comments by the raters brought about improvements in the definitions of activities and design of the tool. Increased effectiveness in both the tool and raters was noted by a progressive rise in the percentages of rater reliability. An average rater reliability of just under 80% was attained, and the final format of the instrument was regarded as "user friendly" by the raters.

During the observations, many of the activities listed with the tool were observed, and basic or modal activities were identified within each of the environments. Some new activities were added to the list of items on the checklist, while very few items were deleted. This indicated that the instrument had effectively captured the basic play activities that were common to school playgrounds and elementary school children. Thus, the tool has strong content validity. These findings affirmed that particular play activities are required for minimal involvement for various playground environments. To better reveal the nature of play deficiencies, it was recommended that the items from the instrument be task analyzed in order to allow for more accurate assessments of the play repertoires of elementary school children.

Recommendations

The results from this investigation indicate that the playground assessment tool is a valid instrument which can be used to collect reliable data on elementary school children. To further enhance the effectiveness of this instrument, it is strongly recommended that investigations be conducted into the task analysis of the activities within each of the tool's playground environments. Additionally, research applying the instrument to extended age groups and to individuals who are handicapped is also suggested. Grade one children were chosen as the youngest group because it was believed that they would likely have the basic phylogenetic skills mastered, but that a majority of the ontogenetic play activities associated with playgrounds would likely be in the developmental stages. To effectively note the progression and development of the different playground activities, it would be advisable to conduct longitudinal observations on each of the age groups. By collecting data that reflected the various age groups, more normative data would be available with which to compare for "normal" and "abnormal" play behaviours. Observations of handicapped children on playgrounds would extend the use of the tool, and would possibly confirm the play activities which have been identified as being essential for minimal participation.

To overcome the problems associated with subject loss during lunch breaks, it is recommended that the observations be made only during the recess breaks, therefore insuring that most of the selected subjects would be present for the study. Another suggestion would be to randomly select the subjects, and then consult the home room teachers as to whether any of those particular children would be unavailable during the lunch hour. These students could then be priorized for recess observations, while other students who stayed for lunch could be observed during the noon break. Both solutions involve greater amounts of time in collecting data.

For the activities and environments on the checklist to be more representative of the wide range of equipment that occurs on playgrounds, more schools may need to be examined. While certain types of playground apparatus may be common to most schools, it must be reinforced that each play environment and its patrons forms a unique "econiche", with culturally normative activities that may be particular to those settings. The findings of this study can be generalized and applied to other circumstances, but more extensive investigations in play activities of children from other regions and during other seasons would greatly substantiate the original playground instrument.

When analyzing and interpreting the observations, there was difficulty in determining whether low or no counts with some of the activities indicated a lack of ability or a lack of interest. This issue is critical because it involves either the creation of intervention programs to establish and refine basic skills, or it goes to the other extreme of encouraging other challenges or leaving well enough alone. Pre-testing or post-testing subjects in some fundamental tasks (eg. throwing, catching, kicking, hanging, running, etc.) and in some of the tasks listed on the checklist (hangs upside down, rides swing while standing, runs up slide) would be one method of examining whether a lack of ability or interest influenced the results.

The methods used to gather the information on the free play activities of children may need to be reviewed. An interval-event time sampling procedure was utilized for this investigation, but a continuous time sampling procedure may have provided richer, more conclusive data from each of the subjects and from the different types of playground environments. As well, the checklist provides baseline activities, but it is recommended that other researchers not hesitate to add events that are unique to the items on the instrument. In doing this, the various cultural norms of different econiches could be recognized and compared.

Ultimately, it is hoped that continued research into the play activities of children will impact on the format and design of the actual playground environments, and that playground activity development programs can be established so that learning through play is enhanced and maximized. One of the greatest challenges facing researcher of children's play is effectively documenting and understanding the various play behaviours. The other more demanding challenge is creating intervention programs which promote overall development, but which do not impinge on the essence of "free play".

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APPENDIX A

PARENTAL CONSENT LETTER

PARENTAL CONSENT LETTER

May 30, 1990

Dear Parent or Guardian:

During the past few weeks, we have spoken to the principal of the school that your child attends regarding a research project that we wish to conduct. The study will commence in June and it concerns the play patterns of children in outdoor play environments. We are particularly interested in observing the children at lunch hour and recess, to examine the types of games and activities that the children participate in during this period of time. This study is in partial fulfillment of a Master's thesis, and also is an extension of a previous study funded by the Canadian Fitness and Lifestyle Research Institute.

The main interest of this study is to validate an assessment tool that analyzes handicapped and non-handicapped children's playground skills and activities. Observers will monitor the play of children in the school yard for approximately 15-30 minutes during the lunch hour or recess. There will be no interaction or intervention by the observers, and only the home room teachers will be aware of which children will be observed on that particular day.

The project has been approved by the Edmonton Public and Separate School Boards, and by the staff at your child's school. Confidentiality of results and anonymity of the children participating in the study will be maintained in accordance with the School Board's policies. If you have any questions or concerns about the research, please do not hesitate to contact Denise Wagner (439-3360), Dr. Patt Nearingburg (492-3182), or Dr. Jane Watkinson (492-1002).

Thank you for your time and interest.

Sincerely,

Denise Wagner,
Graduate Student,
University of Alberta
Faculty of Physical Education and Sport Studies

APPENDIX B

PLAYGROUND ACTIVITIES ASSESSMENT INSTRUMENT FOR DATA COLLECTION

FIXED TIRES/TUBES										
NAME										
1. Climbs up/down treads										
2. Climbs in/out										
3. Climbs under										
4. On top:										
sits/crouches/lies										
stands										
walks										
5. Jumps down from top of tire										
6. Jumps from tire to tire										

SLIDE WITH LADDER										
NAME										
1. Climbs up ladder frontwards										
2. Climbs up ladder backwards										
3. Slides down:										
ramp										
spiral slide										
tube slide										
4. Slides:										
on seat forwards										
on seat backwards										
on tummy head first										
on tummy feet first										
on knees										
5. Walks or runs down slide										
6. Walks or runs up slide										

SWINGS (Traditional/Tire)										
NAME										
1. Mounts/dismounts swing										
2. Climbs onto moving swing										
3. Rides swing while:										
sitting										
standing										
lying on stomach										
hanging with arms										
4. Pumps while sitting										
5. Pumps while standing										
6. Dismounts moving swing:										
at bottom of arc										
at top of arc (jumps)										
7. Underducks										
8. Spins swing										

CLIMBING APPARATUS										
NAME										
1. Climbs up/down ladder										
2. Front support on horizontal bar										
3. Jumps up and grabs overhead bar										
4. Hangs with flexed/extended arms										
5. Swings on bar, pumping with knees										
6. Hangs and travels on bars										
7. Balances/walks on narrow surface										
8. Hangs from hands & knees on adjacent rungs										
9. Hangs from hands & knees on one bar										
10. Scales vertical pole										
11. "Skin the cat" on the bar										
12. Jumps down or on equipment										

OPEN SPACE (locomotor)										
NAME										
1. Runs quickly frontwards										
2. Runs quickly backwards										
3. Runs away/chases others										
4. Jumps up and down										
5. Jumps down from equipment										
6. Hops on one foot (consecutively)										
7. Runs and jumps over things										
8. Runs and jumps onto something										
9. Split jumps										
10. Stride jumps										
11. Cossack kicks										
12. Gallops/skips										
13. Wrestles										
14. Log rolls										
15. Somersaults										
16. Gymnastic stunts										

SMALL EQUIPMENT (balls, bats, gloves)										
NAME										
1. Throws ball										
2. Jumps & straddles moving ball										
3. Throws ball to wall & catches return										
4. Catches tossed ball										
5. Throws & catches football										
6. Throws & catches frisbee										
7. Bounces ball & catches (successive)										
8. Basketball dribble										
9. Catches with a glove										
10. Kicks ball										
11. Soccer dribbles (foot)										
12. Heads ball										
13. Strikes aerial ball (bat with arm)										

GAMES (Organized Groups)

NAME										
1. Tag										
2. Hopscotch										
3. Jump rope										
4. Dodgeball										
5. Soccer										
6. Volleyball										
7. Softball										
8. Murderball										
9. 7-Up										
10. Pig in the middle										
11. Bounce and clap										
12. Football										
13. Other (specify)										